REPORT RESUMES

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CROP, LAWN, AND GARDEN SEEDS SALES AND SERVICE. AGRICULTURAL SUPPLY - SALES AND SERVICE OCCUPATIONS, MODULE NUMBER 8.
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THE PURPOSE OF THIS GUIDE IS TO ASSIST VOCATIONAL AGRICULTURE TEACHERS IN PREPARING HIGH SCHOOL STUDENTS FOR AGRICULTURAL SUPPLY OCCUPATIONS. ONE OF A SERIES, THIS MODULE WAS DEVELOPED BY A NATIONAL TASK FORCE ON THE BASIS OF DATA FROM STATE STUDIES. THE SPECIFIC OBJECTIVE IS TO DEVELOP UNDERSTANDING AND ABILITY NEEDED TO ENTER AND ADVANCE IN RETAIL FARM AND GARDEN SEED, PLANT, AND SUPPLY BUSINESSES. SECTIONS ARE (1) PRODUCT KNOWLEDGE, (2) PLANT MATERIALS, (3) PLANT MATERIAL PRODUCTION FACTORS, (4) VARIETAL NAMES AND CHARACTERISTICS, (5) TAG AND LABEL INTERPRETATION, (6) CUSTOMER SERVICES, (7) PRODUCT COMPARISON, (8) CATALOG INFORMATION, (9) BEAUTIFICATION AND PRODUCTION COSTS AND EXPECTATIONS, AND (10) CUSTOMER ASSISTANCE. SUGGESTIONS FOR INTRODUCING THE MODULE AND EVALUATING EDUCATIONAL OUTCOMES, AND SOURCES OF INSTRUCTIONAL MATERIAL ARE GIVEN. EACH SECTION INCLUDES SUBJECT MATTER CONTENT, TEACHING-LEARNING ACTIVITIES, AND INSTRUCTIONAL AIDS AND REFERENCES. THE MODULE IS DESIGNED FOR 35 HOURS OF CLASS INSTRUCTION, 35 HOURS OF LABORATORY EXPERIENCE, AND 70 HOURS OF OCCUPATIONAL EXPERIENCE. TEACHERS SHOULD HAVE A BACKGROUND IN AGRICULTURAL SUPPLY AND STUDENTS SHOULD HAVE AN OCCUPATIONAL GOAL IN THE FIELD. THIS DOCUMENT IS AVAILABLE FOR A LIMITED PERIOD AS PART OF A SET (VT 000 632 - 000 644) FOR $7.00 FROM THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION, THE OHIO STATE UNIVERSITY, 980 KINNEAR ROAD, COLUMBUS, OHIO 43212. (JM)

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CROP, LAWN, & GARDEN SEEDS SALES AND SERVICE

One of Twelve Modules in the Course Preparing for Entry in

AGRICULTURAL SUPPLY - SALES AND SERVICE OCCUPATIONS

Module No. 8

The Center for Research and Leadership Development
in Vocational and Technical Education

The Ohio State University
980 Kinnear Road
Columbus, Ohio, 43212

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August, 1965

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MEMORANDUM

TO: The ERIC Clearinghouse on Vocational and Technical Education
The Ohio State University
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FROM: (Person) James W. Hensel (Agency) The Center for Vocational and Technical Education

(Address) 980 Kinnear Road, Columbus, Ohio 43212

DATE: August 7, 1967

RE: (Author, Title, Publisher, Date) **Module No. 8, "Crop, Lawn, and Garden Seeds - Sales and Service," The Center for Vocational and Technical Education, August, 1965.**

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Occupational Focus Job entry in retail business that sell agricultural supplies
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Uses of Material Instructor course planning
Users of Material Teachers

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Teacher Competency Background in agricultural supply--sales and services
Student Selection Criteria High school level, goal in agricultural supply--in the area of sales or service.
Time Allotment Estimated time listed in module. (P)

Supplemental Media --
Necessary x
Desirable
(Check Which)

Describe Suggested references given in module. (P)

Source (agency)
(address)

CROP, LAWN AND GARDEN SEEDS, PLANTS, AND SUPPLIES--SALES AND SERVICE

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CROP, LAWN AND GARDEN SEEDS, PLANTS, AND SUPPLIES--SALES AND SERVICE

Major Teaching Objective

To develop the understandings and abilities needed to enter and advance in employment in the retail outlets for farm and garden seeds, plants, supplies, and related materials.

Suggested Time Allotment

At School

Classroom instruction	35 hours	
Laboratory experience	35 hours	
Total at School		70 hours
Occupational experience		70 hours
Total for Module		140 hours

Suggestions for Introducing the Module

Introductory Material for Teacher

Until recently, most farm crop seeds were sold directly by producers to the farmer. Small quantities of garden and lawn seeds were handled by hardware, grocery, or feed supply stores. In some areas, local elevators purchased seeds from growers and resold them to farmers. As improved crop seed and plant materials have become available, the distribution of these items has changed. Companies which previously dealt only in seed and plant materials have taken over the production and distribution of many of these items. These companies and other businesses handling crop, lawn and garden seeds, plants and supplies are employing increasingly large numbers of sales personnel. These developments and the growing need for trained salesmen provide the background for the material presented in this module.

An employee in agricultural supply--sales and service occupations will usually have to handle more than one area or product. While he may specialize in one or more lines and may team with another worker to provide service to customers, he will be expected to have a broad working knowledge of both sales and service. Although initially an employee may do largely the work of unpacking and arranging stock, or even sweeping and dusting, there is no reason why advancement up the merchandising ladder of sales and service should not take place. The usual progression is from clerk to product salesman, to head salesman, or servicemen to positions on the managerial level.

Undoubtedly, revised editions of the Dictionary of Occupational Titles or similar works such as the Handbook of Agricultural Occupations[1] will clarify the job description of the workers in agricultural supply--sales and service occupations at the retail level. Until a more precise job description is available, it is suggested that teachers use any or all of those appearing in the current edition of the Handbook of Agricultural Occupations as applicable, including the following:

	Page
Country Store Clerk	118
Farm Hardware and Equipment Store Employee	120
Feed Mill Employee	121
Farm Cooperative Service Store Employee	123
Farm Equipment and Supply Salesman	126
Grain elevator (Feed Mill) Employee	127
(Truck Driver - Salesman)	127
Garden Center Employee	198
Landscape Gardener	206
Golf Course and Lawn Worker	199

In many respects, the job description for a garden center employee most nearly describes the employee to which this module applies. However, there is no mention of sales which is a major feature of this course. By adding and emphasizing the sales responsibility to the garden center employee's job description or by adding this to other job descriptions needing sales competencies, the teacher can better inform and train his students for the jobs becoming available.

Work with the Students in Class

After the presentation of the introductory material, the teacher can develop with the students two listings in adjacent columns showing the different items, such as seeds, plants, garden and lawn materials, and supplies needed by farmers, and the place or source of supply for each.

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[1] Hoover, Norman K. Handbook of Agricultural Occupations, 1963, Danville, Illinois: The Interstate Publishers and Printers.

Using these listings, help the class develop a list of business establishments offering complete or partial coverage on items of local needs for seeds and related plant materials. Using the chalk board and class discussion develop an understanding of the functions usually performed by a business establishment in serving its clientele for seeds, plants, and service. Such a list might include:

1. Sells both crop and garden seeds
2. Sells either field or garden seeds but not both
3. Sells lawn seeds as speciality as well as crop and garden seeds
4. Sells seasonal garden plants as well as seeds
5. Sells ornamental plants as well as garden plants and seeds
6. Sells trees (orchard, ornamental, forest) as well as plants and seeds
7. Sells fertilizers (organic, inorganic, combination) as well as seeds and plants
8. Sells mulching materials (plastic, peat, corn cobs, straw, as well as seeds, plants, and fertilizers)
9. Sells garden tools and equipment, sprayers, dusters, pruning tools, in addition to seeds and plants
10. Sells pesticides including rodenticides, as well as seeds and plants.
11. Provides planning for application service* in addition to sales
12. Provides consultation service at store
13. Provides consultation services including detailed planning* at prospective purchasers home
14. Provides complete sales and service* for all aspects of the agricultural supply business

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*Indicates the service for which a charge is made, if not included in the cost of the material purchased.

As the list is developed the teacher should have the students consider the type of agricultural business in which they would like to be employed. The competencies which will be required for job entry and success should also be considered. The students will likely suggest competencies developed in other modules. These should be recognized and related to the special needs for those working with materials in this module.

The teacher should work with the students on the basis of their abilities and interests. This work should encourage individual students to appraise themselves and help determine the major emphasis in this module. A form such as the one illustrated here could be used by each student for self-appraisal.

Competency Required	For Entry	For Success	Possesses at Present	Needs to be Developed	What Can this Course Do To Develop

While it is recognized that students' concepts of specific competencies and the wording or terminology they may use will probably be different than the teacher's or as used here, in all probability they will include the following:

Competency Number

I. To know what products are offered for sale and usage which can be made of these products by the purchaser

II. To understand the types and usage of various plant materials

III. To be familiar with factors in plant material production that benefits customers

IV. To become familiar with varietal names and characteristics

V. To be able to interpret the information on tags or labels on containers

VI. To be familiar with the services offered by a firm which are either beyond the skill of the customer or which require the use of special equipment

VII. To be able to compare the strong and weak points of the products offered by the employee's company and its competitors

VIII. To develop the ability to find product information quickly from catalogs and other sources

IX. To understand the basic economics of home beautification, crop, and garden production in terms of costs and expectations

X. To be able to help customers solve their problems through advice given related to plant production

The order in which the competencies are presented may be varied. However, several factors were considered in developing the order in which they are listed. Primary importance is given to starting with the simplest competency and progressing to the more complex. This order also reflects the probable job sequence that the new employee would follow in on-the-job training. The adaptability and flexibility of this outline for teacher use was also considered in developing the sequence. A teacher may desire to delay presentation of some competencies or he may omit some of the last competencies in favor of expanding those at the beginning. The needs of students should be the basis on which the use of this module is planned.

No attempt is made in this module to teach such basics as (1) the nature and properties of soils, (2) principles of plant growth, (3) the chemistry of fertilizers and pesticides. Much of this material is ordinarily covered in the early years of a conventional vocational agricultural course. It is presumed that most students in an Agricultural Supply--Sales and Service course will have already completed basic work in these areas. However, there is no objection to including these materials, especially if the individuals enrolled can be homogeneously grouped so that there will not be a repetition for those who have already covered such material.

A seed store or garden center exists to make a profit for the owner or owners. The primary purpose of the employee is to insure this by increasing the volume of business. Regardless of whether the retail sales or service man is working for a fixed wage or is on a commission, or a combination of both, there is a direct relationship between his volume of work and what the employer can pay him. While many may enter this occupational field, those who cannot produce on a long time basis will be eliminated, while others will advance in earnings and positions of responsibility.

It is important that the teacher help his students develop the abilities they need to become the type of employee who will help increase the profit of the agricultural supply business.

Competencies to be Developed

I. To know what products are offered for sale and usage which can be made of these products by the purchaser

Teacher Preparation

Subject Matter Content

While not all seed or garden stores may offer all of the following items, it may be helpful to group them somewhat as follows:

Field or crop seeds
Garden seeds
Green plants
Shrubs or bushes
Trees
Bulbs and tubers
Miscellaneous plants
Mushrooms
Lawn seed
Lawn sprigs or plants
Fertilizer materials
Herbicides
Insecticides
Rodenticides
Innoculants
Seed treatments
Mulching materials

DESCRIPTION	CUSTOMER USE
Field or Crop Seeds	
Dry materials, relatively non-perishable, usually sold in bulk or large quantities. Used for the production of feed for livestock or commercial quantities of food for man.	-Cereal grains; for feed and and food. Forages; for hay, silage, and soilage. Legumes for hay, silage, soilage, and soil improvements. Oil seeds for oil and animal feed. -Cottom; for fiber and oil seed. -Tobacco; to plant in beds for transplanting. Speciality crops.

DESCRIPTION	CUSTOMER USE
Garden Seeds	
Generally divided into flowers for ornamental purposes and garden crops for food production. Usually sold in packages although commercial producers may buy in quantity lots.	- Flowers for home beautification or commercial resale. Garden crops for consumption or sale in the green or perishable state, mature fruits, or seeds.
Green Plants or Sets	
For ornamentals or food. Produced from seed and sold to the customer to shorten the growing season or maturity time. Usually sold in "flats" or "pots," but may be taken directly from hotbed or coldframe.	-Flower plants may be for outside or inside use. Garden plants may be in small lots for home gardens or bulk quantities for market gardening and machine setting in field production.
Shrubs or Bushes	
Usually perennial with woody growth. May be in dormant or growing stages depending on the time of year and type of plant. Shrubs are usually for home beautification or landscaping with the term "bushes" usually denoting food production.	-For home planting either for beautification or food, or commercial planting for resale.
Trees	
Usually dormant or "balled," or dug on customers' order for immediate replanting. May be for fruit, seed, nuts, or ornamental. Usually several different heights, and possibly several different years of previous growth.	-Variety of uses; for shade, beauty, food, forest or windbreak purposes.

DESCRIPTION	CUSTOMER USE
Bulbs, Tubers, Corms	
Underground plant parts used for the production of new plants either ornamental or for food	-Bulbs and corms usually for flowers -Tubers for flowers and shrubs, or food
Miscellaneous Plants (Grape Vines)	
Hardwood cuttings which have been rooted and possibly grafted	-Fresh fruit, juice, and wine production
Mushrooms	
Bricks of spawn used to start fruiting when spread upon compost material under proper conditions for growing	-For limited home use or commercial production
Lawn Seed	
Individual varieties or combinations to meet varying conditions: shade, rapid growth, to stand usage, color, texture, home lawns, or golf courses	-Kentucky blue, best all round -Fescue, rapid establishment -Bermuda, stands hard treatment -Merion blue, expensive -Orchard groves, shade -Ryegrass, fall seeding, turf establishment
Lawn sprigs or plants	
Creeping bent grasses or Bermudagrass	-Provides cushiony turf when established
Fertilizer Materials	
For starting plants, liquid or dry	-Small packages for making starter solutions for transplants
For home garden, organic, inorganic	-Packages and smaller sacks for house plants and gardens
For commercial gardens and greenhouses	-High analysis, heavy in nitrogen 50-80 lb. bags
For lawns and golf courses	-Specialized analysis and formula for specific situations
In combination with herbicides	-Turf building

DESCRIPTION	CUSTOMER USE
Herbicides	
2, 4-D, liquid concentrate 2, 4-5, T liquid concentrate Combination of 2, 4-D and 2, 4, 5, T Various trade names for complex chemicals for the control of specific weeds or groups of weeds either pre-emergence or post-emergance	-Control annual broad leaf weeds -Control woods growth (poison ivy) -To eradicate undesirable plants usually in small areas or in lawns or for field crops.
Insecticides	
Spray or dust usually concentrated and sold in packaged form for control of (1) chewing insects, stomach poison; (2) sucking insects, contact sprays; (3) gases, repellants and complex chemicals.	-For control of garden insects, flowers and ornamentals around the home in small quantities, and for commercial gardens and field crops in large quantities.
Rodenticides	
Usually packaged material under various trade names either ready mixed or for mixing with extender and bait materials.	-For control of rats, mice, and similar rodents around the house or farm buildings.
Innoculants	
Symbiotic bacteria cultures carried on an inert media.	-Innoculate legume seed to increase nitrogen fixation from the soil.
Seed treatments	
Chemical compounds, such as organic mercury, usually applied in the form of dust.	-Control certain seed-borne diseases

DESCRIPTION	CUSTOMER USE
Mulching materials	
Peat moss by the bale Straw by the bale Ground corn cobs by the bag Plastic Compost, rotted manure, and mixtures	-Provide protection, improve tilth, add organic matter, control weeds

These miscellaneous supplies are covered in detail in another module of this series. The wide diversity of materials handled in various areas and by different stores makes it difficult to identify all of these items. The teacher should determine what should be included in those modules based upon local use and availability.

Suggested Teaching-Learning Activities

An individual will have difficulty in knowing everything about each item offered for sale in agricultural supply businesses prior to starting work, and possibly even after several months or years. For this reason, outlets with more than one clerk usually develop some departmentalization with one person concentrating on certain groups of products. However, there must always be coverage over noon hours, evening hours, or vacation periods. Therefore, each clerk should have a working knowledge of all items and products, even though he specialized in just a few.

Initially, the goal should be to develop overall competency with specialization developing at a later date according to interest aptitude. While a group visit to a representative farm supply store when beginning this module may be introductory and interest arousing, many of the learning activities of this competency can be carried out by students using their own time as individuals to develop their knowledge by observation and discreet questioning in various retail outlets for farm supplies.

The teaching-learning situation might be developed about as follows:

1. Start with the headings on the chalk board, as indicated in the Subject Matter Content.

2. Make use of the knowledge already possessed by members of the class to go as far as possible in developing the listings under each heading. When terms or related scientific concepts are used which seem unfamiliar to the class, the teacher can "tie back" to other high school courses. When

it is obvious that specific teaching must be done to bring the majority of the class up a level to be able to understand this module, it is probably better to allot a specific period of time for this, in addition to the time planned for this competency. For example, an understanding of the terms annual, biennial, and perennial might need one class period, but an understanding of the classification of plants would take several periods and should only be carried to the degree needed for good agricultural sales and service.

3. Have the students develop their knowledge by visits to retail outlets. This will help broaden their previous knowledge by checking on specific matters and items with which they are not familiar.

4. Add to the material under the respective headings on the chalk board as the students add to their knowledge about various products.

5. Have the students read current and past issues of farm and garden catalogs, magazines, special columns in daily or weekly papers, listen to farm programs over the radio, or watch television farm programs to further increase their product knowledge.

6. Have each student record the material placed on the chalk board in his notebook, leaving space for additional material as it is developed.

7. Toward the completion of this competency, interest as well as informal testing can be achieved by dividing the class into the class into pairs for role playing. One member of each pair plays the role of the customer who has a problem which he describes in "piece meal" fashion, and the other is the clerk who tries to sell him the right product to overcome the difficulty. The teacher or the class evaluates the performance based on questions and responses which indicate a working knowledge of products and capabilities. Running scores might be kept to determine who "won", but care should be exercised to prevent the consumption of too much time, or allowing "fun" to become more important than "learning."

8. Whenever possible, try to schedule this competency when it is "seasonal" for some major group of items.

9. The suggested time allotment for teaching this competency:

Classroom instruction--------------	3	hours
Laboratory experience--------------	3	hours
Total------	6	hours

Suggested Instructional Materials and References

1. Seed and farm supply catalogs
2. Farm and garden magazines
3. Selected modules from the course on Ornamental Horticulture developed at the Center.

Suggested Occupational Experiences

1. Work in a retail outlet is the best way to develop this competency. This may be part time or full time, during the school year or summer vacation, and in either sales or service capacities.
2. Work in the merchandising of products of the school farm, greenhouse or individual home projects is also satisfactory to provide the same work experience for this competency.
3. Work in production or marketing phases of farming or commerical gardening will be helpful in developing certain aspects of this competency.
4. When actual experience is not possible, observation and class reports may be substituted to help develop this competency.

II. To understand the types and usage of various plant materials

Teacher Preparation

Subject Matter Content

This competency may already by familiar to a class whose members have had vocational agriculture or horticulture. In this case, it may be omitted from the teaching of this module or used briefly, for review purposes. However, the time elapsed since the original exposure and sketchy treatment sometimes given this area in teaching production agriculture make it necessary to review this area before proceeding with other competencies in the module. This can be determined subjectively by the teacher or by pre-testing.

The subject matter content for this competency is outlined showing the type of material and the significance to agricultural supply--sales and service.

Seeds

1. Importance of size to livability, rate of seedling, cost per acre
2. Importance of germination to livability, rate of seeding, cost per acre
3. Importance of uniformity of size to planting
4. Parts of seed and function of each
5. Male and female plants, flowers, sexual and asexual reproduction
6. Importance of test weight per bushel to size, rate of planting, cost per acre

Transplanting Seedlings

1. Sowed in hotbeds, coldframes or flats
2. Transplanted to pots, cells made from "jiffy strips," flats or direct to garden or field
3. Method of handling at transplanting, sale, and shipment

Grafting or budding seedlings

1. Stratification, planting, digging, grafting, budding, transplanting, preparing for sale
2. Grafting and budding usually a function of nursery, rather than farm or garden store which merely sells the finished product
3. Application to roses, and ornamentals, as well as fruit trees
4. Why used instead of seed

Hardwood cuttings

1. Selection, planting, transplanting, digging, preparation for sale or shipment
2. Especially applicable to grapes, hedge plants, ornamentals, and some trees
3. Why used in place of seed

Softwood cuttings

1. Selection, planting, watering, transplanting, potting
2. Especially applicable to flowers, cactus, sugar cane, and some ornamentals.
3. Why used in place of seed

Layering

1. Proper time and method of putting tips under ground while attached to parent plant
2. Time and method of transplanting
3. Particularly applicable to grapes or berries produced on canes
4. Why used rather than seed

Stolen or Offsets

1. Taking advantage of nature's unique way of reproducing some plants; spacing, removing runners and handling.
2. Application to ornamentals
3. Application to peanuts
4. Why used rather than seed

Division

1. Division of clumps of parent plants benefits both the old and the new
2. Application to ornamentals, flowers and garden plants
3. Why used instead of seed

Rootstocks (Rhizomes)

1. Makes sod formation possible
2. Some sod grasses become weeds
3. Used in connection with seed or in place of seed

Bulbs, Tubers, and Corms

1. Taking advantage of nature's unique way of reproduction
2. Application to flowers and vegetables
3. Why used instead of seed

Other plant materials used in local areas

Suggested Teaching-Learning Activities

Much of this competency can be developed by capitalizing on individual knowledge of class members. This can be guided and stimulated by appropriate questions from the teacher. Significant facts should be recorded in student notebooks under each item as it is considered. Plant material, either fresh or dried, will be especially helpful where it is readily available from local sources. Demonstrations necessary for this module should be given by the teacher or a qualified student to bring about specific understandings.

Start with a question such as: "What is the most common way that a plant reproduces itself?" Then lead the class to discover other types of reproduction by asking "What other ways, besides seed, do plants reproduce?" The list above, can then be developed, in the order in which the students identify the types of reproduction.

Before proceeding to the next type of reproductive material, the teacher should develop the points which are important to an agricultural supply or service man. The teacher can do this by asking questions to develop thinking, making appropriate demonstrations and by encouraging discussion on the questions. One question and one demonstration is listed for each type of material to get the teacher started in developing whatever is needed to insure good class participation. These should be considered as suggestions only, and the teacher should elaborate as he sees fit. There is not necessarily any connection between the question and the demonstration.

Seed

Question - Does it make any difference whether wheat used for seed are large or small? (Student response is always tested by the teacher with why, or why not, followed by subsequent questions to insure good class discussion.)

Demonstration - Test weight per bushel, if the students are not familiar with it.

Seedlings

Q. If you want some fresh green onions, would you start with some seed, some seedlings, or some of last year's onions?

Transplanting

D. Proper method of transplanting if the class is not familiar with it.

Seedlings for grafting

Q. If seedling apple trees cost 1¢ each and a two year old tree costs $1.25 at (insert name) garden store, which would you buy? Why?

D. Grafting, and/or budding, if the class is not familiar with it.

Hardwood Cuttings

Q. If you want some new grape plants, what would you use: seeds, roots, or vines?

D. Make a hardwood cutting, and if material is available have each student make several. May be taken home for transplanting, if desired.

Softwood Cuttings

Q. If you want some new geraniums, what part of the plant would you start with? Why?

D. Make a softwood cutting, and if material is available have each student make several which may be taken home for transplanting, after planting in sand at the school for easy observation.

Layering

Q. What is the easiest way for a person to get more raspberry plants in order to increase the size of his planting?

D. Demonstrate layering on plants available at the school ground. This may not be important enough to make a field trip for this purpose, but it might be worked in with a field trip taken for another purpose.

Runners or Stolens

Q. If you wanted some more strawberry plants, would you use the seed, a cutting, layering, or what?

D. Demonstrate how to turn runners in the row, cut off, or stimulate with fertilizer to control the width of the row and distance between plants.

Division

Q. If you want to buy some new rhubarb plants, what part of the plant will you get?

D. Use a space to divide any suitable plant readily available on the school ground.

Underground Stems or Rhizomes

Q. Why does Kentucky bluegrass make a sod and a grass such as Timothy does not?

D. If possible, dig some bluegrass which is infested with quackgrass and identify the two root systems. This will show why quackgrass will crowd out bluegrass or almost any other grass except Johnson grass.

Bulbs, Tubers, Corms

Q. Potatoes and tomatoes belong to the same family of plants. Why do we plant the seed of tomatoes and not plant the seed of potatoes?

D. Cut a potato into seed pieces to indicate the importance of "eyes" in each. Plant in a pot to show reproduction.

Suggested time allotment for teaching this competency

Classroom instruction--------- 5 hours
Laboratory experience--------- 10 hours

Total--- 15 hours

Suggested Instructional Materials and References

Instructional material
Plant materials secured locally

References

1. Christopher, Everett P. *Introductory Horticulture*, Chapter 5.
2. Shoemaker, James S. *General Horticulture*, Chapter 6.

T*3. Hartman and Kester. *Plant Propagation: Principles and Practice.*

4. State Extension Service Bulletins
5. Modules 3 and 4 from course on Horticulture-Service Occupations published by the Center

* The symbol T (teacher) or S (student) denotes those references designed especially for the teacher or for the student.

Suggested Occupational Experiences

1. Work in a nursery is probably the most desirable, particularly if flowering annuals are produced.
2. Work in a commercial market garden, small fruit production enterprise, landscape center, or sodding operation is satisfactory.
3. Work in a farm store, or garden store, is satisfactory from the point of view of improving the trainee's recognition of the finished product, but much of the actual reproduction process may not be apparent.
4. Work in home situations such as garden, ornamentals, and lawns, is satisfactory, particularly if on an individual project basis under supervision.

III. To be familiar with factors in plant material production that benefit customers

Teacher Preparation

Subject Matter Content

While much of the following subject matter is of general interest and knowledge in Agricultural Supply--Sales and Service, it is recognized that students planning to work in the seed industry, particularly hybrid corn, will be more interested in plant breeding and seed production as applied to cereal grains than to ornamentals. By the same token, those students who will work in garden centers, where field seed may be of minor importance, will be more concerned with plant breeding as applied to garden seeds, flowers, and ornamentals. Certain principles are "broad spectrum," and a basic understanding of them is necessary even though their application varies with the plant material concerned. For example, "hybridization" and "pure line selection" must be understood, not only in field seeds such as wheat, soy beans, and corn; but also in garden seed such as tomatoes and sweet corn, and ornamentals such as roses.

Previous classroom experience must be considered in planning for the development of this competency. In many schools, courses in Agriculture I and II will have been fairly adequate in this area, while in others it may have been introductory or omitted entirely. If the former is true, the teaching at this time should be to reinforce and go deeper while in the latter case, the teacher should start from the beginning to insure understanding. Pre-testing will be a valuable guide to the teacher and a "convincer" to the students.

While some seed and plant material offered for sale is nothing more than commercial reproduction of old line varieties with some recleaning (seed), or culling (ornamentals), major suppliers of retail outlets must continually develop and improve stocks in order to meet the competition for the discerning customer. For this reason, the subject matter for development of this competency is directed toward newer varieties and higher quality.

1. Pure Line Selection

This is the oldest method of seed improvement and still has a major place in experiment station and commercial producer's work. It is readily observable that there are differences between fields of the same variety and between plants in the same field.

However, this is largely work for a plant breeder working for an experiment station or a large commercial producer.

The process of pure line selection involves:

a. Selection of a large number of individual plants which have most of the desirable characteristics such as height, strength, test weight, color, diease or insect resistance, harvesting qualities, milling qualities, and flavor.

b. Field testing of each selection by growing them separately in small plants to determine the presence of characteristics desired.

c. Elimination of less desirable varieties or selections and re-testing.

d. Final selection of desirable varieties which will provide breeder seed for multiplication by selected growers who produce foundation seed.

e. Foundation seed is further multiplied by selected growers to produce registered seed.

f. Registered seed is grown under inspection to produce certified seed to be used for commercial production.

Pure line selection is most applicable to plants which are self-pollinated and have complete flowers. It is also widely used with plant materials which are reproduced asexually.

2. Hybridization

Hybridization has made it possible to improve plant yields and quality where pure line selection has failed. The increased use of hybrid seed makes it important for the student to know the condition under which it may be used. He will then be in a position to provide sound advice to customers who buy such seed.

Hybrides result from the crossing of two or more separate, unrelated, pure lines. The "vigor" which occurs as the result of crossing such lines is inherent in the hybrid seed the customer buys.

The salesperson needs to remind customers that hybrid seed is good for only one crop. If the seed from such a crop is saved, the offspring plants of the next generation will revert to the original lines making up the hybrid. These offspring will not have the desirable characteristics of that hybrid.

Hybrid seeds or started plants available on the market today are vegetables such as tomatoes and peppers; annual and perennial flowers; corn sorghums, and other field crops. The customer who uses hybrids should carefully select that hybrid which will meet his specific requirements.

The average salesperson will not need a detailed knowledge of the hybridization process to be successful. The background of the students and local use of hybrids should be the basis for selecting modular content relating to hybridization.

3. Mutations

The third way new varieties are developed is through the discovery and selections of "mutants." These are individuals with different characteristics from others produced by the same parent. This is best illustrated in the case of apples. Theoretically, every fruit from a given tree is essentially the same. However, mutants (bud sports in this case) may suddenly appear, producing apples with an entirely different appearance or qualities from that of other apples on the same tree. If these have desirable characteristics and breed true, either by self-fertilization or vegetative reproduction (grafting in the case of apples), a new variety can be developed which provides increased sales to the producer and increased satisfaction to the consumer. A good illustration was the development of the Golden Delicious apple from a tree of the conventional Delicious variety.

In collecting seed plants in the field for pure line selection, it is entirely possible that the outstanding ones chosen are mutations which breed true but which have a slightly different genetic make up than that of their parents. There is no objection to this, of course, as the objective is improved characteristics rather than perpetuating genetic purity, so the plant breeder does not attempt to differentiate between the two.

4. Improved seed production

There are four classifications of seed used in producing quality commercial planting seed.

a. Breeder seed is limited in availability and is used by the breeder to produce foundation seed

b. Foundation seed remains under the control of the experiment station, either directly or through the seed improvement association it sponsors. Foundation seed is identified by a white tag. This seed is used to produce registered seed.

c. Registered seed is usually one generation away from foundation seed and is used for the production of certified seed. It is produced under close supervision and inspection by seed improvement associations. The yield of registered seed usually does not justify paying its higher cost for commercial field production. Registered seed is identified by a purple tag.

d. Certified seed is produced under supervision of a seed improvement association. It is the high quality seed used by most commercial producers. It is identified by a blue tag. The salesperson should encourage his customers to use this type of seed.

Standards for registration and certification differ slightly from state to state but are readily obtainable for instruction or sales purposes from your own state seed improvement association, department of agriculture, or state university extension service.

After meeting the requirements for certification or registration, the seed is protected from contamination or substitution through special tags and seals controlled by the certifying organization. These tags indicate whether the seed is Registered or Certified--the state doing the certification--the crop and variety name, a number which indentifies the grower and lot of seed so that records can be traced. The certification tag helps insure that the seed is good because: (1) it is the variety it is claimed to be, (2) it has been tested under different environmental conditions and is satisfactory for use as recommended, (3) it has been checked for such quality factors as germination and purity, and (4) the parentage was known by the plant breeders and cooperating growers so that unsatisfactory performance can be traced if necesssary.

The importance of the certification program in the United States is indicated by the fact that 45 states operate programs. Over five billion pounds of good seed are produced under such programs every year. The certification tag is considered the mark of acceptance just as are similar labels applied by testing agencies in industry.

Suggested Teaching-Learning Activities

1. Take students on field trips to see crops produced from pure line selected seed and from hybrid seed.

2. If available, show students results of using seed saved from growing hybrid crops. By planning ahead, the teacher can provide a demonstration by using seed from hybrid annual flowering plants.

3. Use tags from each classification of registered seed when discussing them.

4. Use state seed laws and bulletins of the Seed Improvement Association for background discussion.

5. Develop advantages and disadvantages of hybrids and standard varieties used locally to familiarize students with information they may use with customers.

6. Wherever possible, use a plant breeder, certified seed grower, or seed company salesman as resource persons.

7. The suggested time allotted for the teaching of this competency is:

Classroom instruction-------- 3 hours
Laboratory experience-------- 5 hours

Total------ 8 hours

Suggested Instructional Materials and References

1. Films and film strips available through state sources (seed improvement associations; hybrid seed producers; extension services, etc.) usually feature field seeds.

2. The film, "First the Seed," shows scientific development of seed and how standards of vegetable seeds are maintained (also latest methods of harvesting and packaging vegetable and flower seeds).

3. The film, "A Tree is Born," shows techniques of Forest Service researchers to produce hybrid pines through controlled pollination and selection processes.

4. The state standards for production and sale of certified and regular seed may be obtained from the State Seed Improvement Association or the State Agricultural Extension Service.

5. Publications of State Seed Improvement Associations and major seed producers on improved varieties.

6. Seed and nursery catalogs from major producers and distributors

7. Seeds - USDA Yearbook. 1961, pages 394-401 entitled "Seed Certification in the United States"

8. Application forms and production standards for certification seed from the State Seed Improvement Association.

9. Visual materials such as tags, descriptive brochures, and pamphlets.

Suggested Occupational Experiences

1. Work as a helper in some phase of seed improvement program.

2. Work for a grower, seed house or distributor in a service capacity.

3. Assist a seed company fieldman in his work with cooperating growers and potential customers.

4. Work in a farm supply or garden store.

IV. To become familiar with varietal names and characteristics

Teacher Preparation

Subject Matter Content

A retail sales person must be familiar with variety names and characteristics to be of service to the customer in helping him decide on what varieties to plant. The person whose knowledge covers a wide area of varieties can provide greater service and he may avoid losing a sale because of a lack of such knowledge.

It is almost impossible for any single individual to know all about every variety of field seed, garden seed, flower seed, bedding plants, roses, ornamentals, and fruit and forest trees. However, a person can begin by concentrating on the varieties used locally and adding to this basic knowledge through study. Numerous charts are available from major suppliers for ready information on length of growing season, proper dates for planting, rates of seeding, methods of seeding, spacing of rows and within the rows, cultural practices, insect and disease resistance, and varietal characteristics. By referring to these charts and seed catalogs, the sales person soon develops his knowledge of the significant characteristics or qualities of recommended varieties.

Since a complete listing of groups of plants, with improved varieties recommended for each under varying conditions, is beyond the scope of this module and would be of little value on a nation-wide basis, none is included in this subject matter content. However, in the teaching-learning activities some suggestions are given so that a working list for a local community can be developed by the students as a basis for learning about recommended local varieties.

Suggested Teaching-Learning Activities

1. Divide the class into groups according to the major crop groupings found in the particular locality. Examples: cereal crops, garden crops, flowers, and ornamentals. These may be subdivided into smaller groups if the size of the class permits. Example: Divide cereal crops into corn, wheat, and oats. There can be a further subdivision of class members, but it is better to have students work in pairs rather than singly.

If a class is small it may be necessary for the group to concentrate on one group of plants before starting another.

2. Prepare a master chart on the chalkboard. Later it may be done on heavy wrapping paper or chart material. Headings are indicated on the following page. This may be developed in advance by the teacher or with the students, so that each group of students can select the type of crop or material which they will study and record the information pertinent to the recommended varieties.
3. Provide samples of several recommended varieties for identification study.
4. Use role-playing with pairs of students serving as a "salesperson" and the "customer." Discuss varietal differences and recommendations. Have "salesperson" emphasize the qualities of the recommended variety and attempt to sell this over another product the "customer" might desire.
5. Use quiz or contest to help students to evaluate their knowledge of varietal characteristics.
6. The suggested time alloted for the teaching of this competency is:

Classroom instruction-------	4	hours
Laboratory experience-------	4	hours
Total------	8	hours

Suggested Instructional Materials

1. Catalogs from major seed houses and nurseries
2. Descriptive material and charts secured from crop improvement organizations
3. Extension service publications
4. Standard texts for agronomy, horticulture, and vegetable gardening
5. Resource units available from universities and state departments of education

Suggested Occupational Experiences

1. Work in a business that sells seeds and plant propagating materials. This might be at any time of the year but it is particularly valuable during spring and fall planting seasons.
2. Work in some phase of the production of seed and plant material. This might include work with an experiment station or with growers.

3. Work on a farm, particularly in the crop production operations.

V. To be able to interpret the information on tags or labels on containers

Teacher Preparation

Subject Matter Content

Besides the variety name, one of the most important things for a salesman in the retail seed and plant material business to know is how to interpret the information found on the label or tag. This information is available to the purchaser, but few customers are willing to search for, or interpret, information which should be readily known by a competent sales person. If the salesman does not know, the result is that sales are frequently made based on misinformation or unwarranted assumptions which later cause poor customer relations. The buyer knows his need and the personal circumstances under which the seeds will be used. He is in a better position to make decisions than anyone else, but often needs additional information. Most buyers get more information from retailers (including catalog suppliers) than from any other source. A competent salesperson who can provide the information needed quickly and accurately is appreciated and the process of making a sale is speeded up.

Tags and labels vary in the type of information they contain. In general, four types are found:

1. Requirements of the federal laws and regulations.

2. The requirements of state laws and regulations.

3. Information provided by the grower to induce the purchaser to buy or assist him in proper usage. This is usually cultural information.

4. Some sort of warranty or disclaimer of liability even if this is not required under the law.

Laws and regulations by federal and state governments were passed to protect both the customer and the reputable seller of high quality seed or plant material. The latter has a greater cost of production than an unscrupulous or "get rich quick" type of operator. Until such laws were passed, the precept of "caveat emptor," let the buyer beware, applied equally well to the seed dealer as to the horse trader.

The loss to farmers and gardeners through fraudulent misrepresentation of seeds and related plant material was formerly tremendous, particularly in attempts to take advantage of the public interest in some new crop development, e.g., hybrid corn or the "polyunsaturated" oil-producing seed crops. Federal and state legislation has brought about greater control, particularly in prohibiting false advertising and mislabeling.

The farmer or grower who does not advertise, but merely sells a relatively small quantity of seed or plant material to his neighbors, is not expected to meet the laws and regulations for seed dealers who purchase seed for resale or shipment out of the state. Presumably, the neighbors who purchase the seed have seen it growing and are aware of the grower's ability and reputation for producing good seed. However, when seed production and resale becomes a business instead of a biproduct, conformity to laws and regulations is expected, and penalties are invoked for violations.

The basic purpose of state and federal laws is to insure that seed which is sold is correctly labeled. It is perfectly legal for a seed dealer to sell low quality or even dead seed as long as it is correctly described on the label. Of course a reputable seed man would not do this as he wants a customer to return, but it brings out the point that it is up to the customer to read and understand the information on the label which, according to law, must be attached. When a customer is not familiar with the terms used or the interpretation of percentages, the retail sales clerk should be in a position to explain. The only exception to the labeling requirement is in the case of vegetable and flower seeds where no statement of germination is required as long as it is not below an acceptable standard (see state law or regulation). When this occurs the statement "below standard" must be shown along with the percent of germination and the date.

Individual states have had laws pertaining to the sale of seeds since 1921, and there were several revisions of federal laws leading to the current enforced Federal Seed Act of 1939. The federal acts pertain largely to seed moved through interstate commerce in the United States, or to importations from other countries. The state laws apply to seed sold within the states, that do not enter interstate commerce. The USDA and state experiment stations, growers, processors, wholesalers, and retailers' associations were a major influence in the passage of the rather uniform state and federal seed laws in existence today. If a seed can comply with the requirements of the Federal Seed Act of 1939, it normally will meet the labeling requirements of the different states. The function of the state law is to control the sales of seed which do not go across state boundaries and therefore are not subject to federal control.

Corn Cob Corners Consolidated High School
Vocational Agriculture Department

VARIETY INFORMATION STUDY CHART

Plant group	Variety name	Major purpose	Length of growing period (days)	Time of planting	Rate of seeding per acre	Spacing in rows	Spacing between rows	Stalk characteristics	Disease Resistance
Soybeans	Harosoy	Seed	122	Late May-early June	65-80 lbs. 40-60 lbs. 120 lbs.	thick thick drilled	24" 36" 9"	Tall	Susceptible to root rot
Sweet Corn	Golden cross bantam	Fresh food	82	Late May		24-30"	6 - 9	Medium tall	Excellent
Tomatoes	Heinz	Packing	76	June 1st	2600 plants	3-4 ft.	4-6 ft.	Excellent for field use	Resistant (fusarium verticillium wilt)
Asters	Azure Ball	Flowers (outdoor)	100	60 degree Min. nite temp.	sow transplant put out (pkt. 1000 seeds)	1" ft.	1 ft. (in beds)	Excellent	Wilt resistant
Roses	Mister Lincoln	Hybrid tea	Perennial	Spring	Not applicable	2 ft.	3 ft.	Dwarf	Excellent
Lawn Grass	Kentucky babe	Lawn	Perennial	Spring Fall	20 lbs.	Broad cast		Underground stems	Medium
Ornamental evergreen	Fitzers Juniper	Foundation planting	Perennial	Spring Fall					
Forest evergreen	Red Pine	Lumber windbreak	Perennial	Early spring	1000 trees	6 ft.	8 ft.	Rapid growing	Medium

Note: Add more columns as needed, but the last one should be wide enough for "special remarks."

The laws generally require seed packages to be labeled to show:

1. Percentage of pure seeds present
2. Percentage of weed seeds present
3. Percentage of other crop seeds present
4. Percentage of inert material (dirt) present
5. Percentage of germination
6. Percentage of hard seeds present
7. Name and address of the shipper, seller, or person who labeled the seed
8. The names and rates of occurrence (e.g., number per oz. or 100 grams) of noxious weeds as specified by the state in which it is to be shipped or sold. Most states prohibit or limit the sale of seeds containing noxious weeds even though their presence is correctly indicated on the label.
9. Mixtures of seeds must show the percentage of each kind if the mixture is 5 percent or more.
10. Most states require only that the kind of seed be indicated since it is very difficult to determine varietal purity. However, some states require both kind and variety to be shown along with the percentage determination of the latter.

Certified seed carries two tags for two different purposes. If a variety is named, al least 95 per cent of the seed must be of that variety. The colored tag from the certifying agency indicates on one side the name of the crop, the variety, and the serial number by which the lineage can be traced. On the other side is usually a statement of the limited responsibility of the seed improvement association and whether or not the seed can be used for production of additional seed crops for "recertification." The other tag, usually not the same color as for registered or certified seed, is normally supplied by either the grower or the marketing agency to provide information on inspection and testing, including the purity, control of crop and weed seed, germination, and date of testing. It usually states the warranty or limit of liability in language similar to the following: "The (name) warrants to the extent of the purchase price that the seeds sold are as described within recognized tolerances (due to sampling). The seller gives no other warranty, express or implied."

The two tags make it possible for the distributor to re-label as may be required by state laws without affecting the validity of the certification. This double tagging places responsibility where it properly belongs, since certifying organizations ordinarily do not buy or sell seed.

"Verified origin" tags are intended, as the name implies, to indicate the place or origin of the seed and that the accuracy of this has been originally determined and maintained by several numbers as the seed changes hands from the grower, through brokers, wholesalers and retailers to the customer. These tags are unnecessary on certified seed, which includes this as a part of certification. However, it is very important for other seed in commercial channels, much of which is of high quality, to show this information as the climatic conditions where the seed was grown may be markedly different from those where it is to be planted. As an example, alfalfa produced for southwestern desert conditions will not over-winter well when planted in the northern or eastern states. However, seed adopted for these same states may be produced in the Southwest for planting elsewhere.

The federal law requires that all imported alfalfa and red clover seed must be "stained" to indicate their region of origin and subsequent degree of adaptability for use in the United States. This is done by permanently staining a small percentage of the seed so that the entire lot may be visually identified as it moves through trade channels; this does not affect germination or growing ability. The percentages and colors are as follows:

1. Seed from Canada--1 percent violet
2. Seed from South America--10 percent orange-red
3. Seed from non-established origins or mixtures--10 percent red

Tags or labels must be placed on seed containers in most states to indicate that the contents have been treated against disease or inoculated if this has been done prior to sale. Consequently, it would be possible for a bag of alfalfa seed to have four tags indicating: 1) certification, 2) purity and germination, 3) seed treatment, and 4) inoculation.

In contrast with field seeds where the information is limited to that required by law and is ordinarily placed on tags, flower and vegetable seed are usually put in packages and containers which are designed to catch the customers' eye and provide some information on planting and culture. There is no requirement on shape, size, color, or wording, as long as it is not false or misleading. Some firms confine their colored picture of the product produced from the seed to smaller packages (packets). This is particularly valuable in the case of flower seeds where a large number of varieties exist, often with similar or difficult names. In the case of vegetables, a picture saves many words in showing the customer what to expect.

The usual size for garden and flower seed containers are: packet (pkt.), ¼ oz., ½ oz., 1 oz., ½ lb., and 1 lb. Larger seeds, such as beans and sweet corn, are also put in 5 lb., 10 lb., 25 lb., and 100 lb. sacks. It is cheaper to buy the larger quantities.

Cultural directions vary widely from company to company. Some are very sketchy and others are rather complete. They usually include information on: (1) when and where to plant, (2) how to plant, (3) how to thin or transplant, and (4) harvesting suggestions.

Every seed company either places on the container or makes plain in its catalog or literature that it is not responsible in case the seed does not turn out as expected. This may be complete disclaimer or responsibility, or a warranty limited to the cost of the seed. It is usually stated as a "warranty" although the term "non-warranty" is more descriptive.

Lawn grass seeds have long been difficult for the customer to buy and have been a source of great profit to the merchandiser who was willing to take advantage of: (1) the difficulty of readily identifying different grass seeds once they have been placed in mixtures, and (2) the lack of knowledge of the characteristics of different types of grasses without having to refer to scientific names.

It is perfectly possible for a seed to be labeled as "General Purpose", "Sun and Shade", etc., and still contain certain grasses which meet minimum qualifications but which are not the best types for specific purposes. Even if the reputable firms do indicate the seeds used in the mixture, they do not (unless required by state law) state the percentage of each. For example, a "shady" lawn mixture may contain a large proportion (50 percent) of Orchard Grass which does well in shade, but being a relatively cheap bunch grass rather than a sod grass, will be unsatisfactory to the purchaser who desires a nice finely textured lawn.

Kentucky bluegrass is an example of a standard lawn grass, but it has the undesirable habit of making seed and then becoming dormant during the hot season regardless of the amount of watering. Canada bluegrass is even less satisfactory. Both are spread by underground stems but the former makes a better sod. Annual bluegrass is worthless as a lawn grass and should not be seeded because of leaving bare places when it dies after making seed in the early part of the growing season. The customer cannot be expected to know the scientific names of these four grasses and the usual retail salesperson has not been trained to this extent (more appropriate for post-high school, than high school students). A label may be high sounding, but meaningless when it indicates the seed is made up of *Poa pretensis*, *Poa compressa*, *Poa trivialis*, of *Poa annua*, even though the percentage of each may be given. The *Poa annua* is of no value, the *Poa compressa* is of little value, and the *Poa trivialis* (rough bluegrass) is not worth paying a premium. Improved varieties of bluegrass such as Merion or Windsor are usually not found to any extent in mixtures selling at low prices.

Fieldmen of reputable lawn and turf seed houses are familiar with their product and can interpret the labels for the retail salesperson so that he can be of service to the customer. Salespersons have a responsibility in encouraging the customer to read the fine print on a package giving the seller's position as well as to realize what he is buying. Reputable seed houses believe their seed is good (at least as good as represented) and want to give satisfaction so they can sell more seed to the customer and to his friends in succeeding years. However, they have no control over the weather, or the way the seed is planted and cultivated, and accordingly cannot guarantee the results. Although some firms disclaim any responsibility, particularly those firms which merely package seed bought on the open market, the more customary practice is to assume liability for failures (usually germination) to the extent of the purchase price. Even when complaints are made, it is difficult to tell whether the fault lies with the seed. Consequently, the "racketeer" type of companies do not pay, and the reputable ones do, as a public relations gesture, even though the failure may not be their fault.

The physical appearance of seed containers and tags is frequently indicative of its age and the care received in handling and storage. Packages which indicate a slow turnover or which have been damaged in handling are suspect even though the germination appears satisfactory and the date of testing is the current year. Insect and rodent damage also cast unfavorable images to the customer. Bulk seeds in adjacent bins frequently become mixed unless great care is exercised by sales personnel. To avoid these circumstances, farm supply outlets must make every effort to: (1) move stock quickly (at least during the current season), (2) retest promptly to insure that old seed will germinate (some seed houses mix unsold seed with the new crop as long as the germination of the entire lot is satisfactory), (3) prevent damage to containers in handling (labor saving elevators and conveyors mean less work and less damage, (4) protect the seed from damage from insects (weevils, etc.) and rodents (rats and mice), and (5) avoid mixing or waste due to spillage or broken containers.

Seed dealers are required by state laws to secure appropriate licenses in order to do business. These must be renewed every year with the fee set in accordance to the volume of business. Wholesalers are ordinarily not required to secure retail licenses to sell directly to customers, but a license must be secured and properly displayed at each separate place of business.

Agents for seed producers and dealers are usually required to be registered with the State Department of Agriculture and are issued a registration certificate which identifies them to the prospective customer.

While the subject matter for this competency has concentrated on seeds, practically all of it applies to ornamentals, fruit, and forest trees, which come under state and federal supervision. No attempt is made to refer to the specific state or federal laws and regulations pertaining to plant material other than seed, but it is believed that the teacher will have no difficulty in pointing out their similarity to his students. One thing spelled out in plant materials concerning regulations is the importance of maintaining free stock and the description of control measures which are enfored to protect the entire public as well as the individual purchaser.

Suggested Teaching-Learning Activities

1. Introduce the competency by raising the question with the class "What should you know about the information on tags or labels on seeds to assist the customer and protect the firm for whom you may be working?"

2. Display or pass around a variety of tags and labels collected from different sources for examination by the students.

3. Read, or write on the chalkboard, the information on a label to the class. Ask them what it means.

4. Ask the students to generalize as to the types of information commonly found on all tags and labels. (This is slightly different for field seeds, flower, and garden seeds.) List answers on the board and develop the four general types of information as indicated on page 29 of the Subject Matter Content.

5. Bring out the important requirements of both state and federal laws and clear up in the students' minds why both are necessary even though essentially the same. (Interstate vs. intrastate commerce.)

6. Develop concepts of the implications of the percentage figures (pure seed, weed seeds, crop seeds, inert material, germination, and hard seeds) by asking the students questions which involve value judgements of more than one, such as:

    a. One sample of seed has a purity of 99 percent with one percent other crop seed while another has no other crop seed present, but the one percent is made up of inert material. Which would you buy? Why? Use the same question substituting weed seeds for crop and inert material for other crop seed. (Note that the figures may be taken directly from labels rather than be hypothetical.)

    b. One sample of seed has a germination of 85 percent but contains five percent hard seeds. Another has a germination of 86 percent but has no hard seeds--which one would you buy? Why?

    c. Which would you prefer, weed seeds or hard seeds? Why?

    d. Which would you prefer, high germination or high purity? Why?

    e. One sample of seed has two percent weed seed not considered as noxious, and another has only .05 percent, which includes Canada Thistle seed. Which would you prefer? Why?

    f. Weed seeds are usually small in size compared with grains. Suppose a sample of oats contains 1/10 of one percent of wild mustard seed while another has one mustard seed in one ounce. Ask the students which they would prefer and why? Develop in the students the importance of knowing the relative size of weed seeds when interpreting purity analyses.

7. Develop with the class the order in which contamination of seed other than the pure variety is objectionable, beginning with the least objectionable type. This might be about as follows:

   a. Inert material if not too much to affect the stand

   b. Hard seed if not too much to affect the stand

   c. Dead seed but pure as to variety, if not too much

   d. Other seed of the same kind but a different variety

   e. Other crop seed

   f. Non-noxious weed seed

   g. Secondary noxious weed seed (can be controlled by good cultural practice)

   h. Primary noxious weed seed (difficult to control and usually produced vegetationally as well as by seed).

8. Although not required on labeling, the notation of "pure live seed" expressed as a percentage of the sample that is pure seed and which will germinate is a useful way to compare lots of seed as to quality. It is easily determined by multiplying the percentage of pure seed as stated on the label by the percentage of germination and dividing by 100. Develop the understandings needed by students pertaining to the concept of "pure live seed" by having them examine situations such as the following:

   a. The percentage of pure live seed may be exactly the same as would happen if one sample had a purity of 99 percent with 90 percent germination, while another was exactly reversed with 99 percent germination and only 90 percent purity. Ask the students which they would prefer and why. Many will be like the ordinary customer and feel that they are the same. Actually, the second is much less desirable because it contains ten percent of other than pure seed compared to one percent for the first. Since this allows nine times the chance for weed seeds to be in the sample which may be noxious, it is better to take the high purity with fair germination than the other way round.

   b. Although the percentages of germination and purity apparently have the same weighting to the casual person who looks at the label, this is actually not the case since the determination of purity is more accurate than that for germination. It is usual to allow a variation of six percent on tests for germination taken from the same sample compared to 1.5 percent for purity. This is because of the smaller number of seeds used for the germination test.

c. In row crops, particularly corn, where yield depends on the number of plants per acre reasonably well spaced within the rows, lower germination is much more objectionable than the presence of other crop seed which is usually smothered out, or weeds which may be controlled automatically by the herbicide which is used.

d. Rates of sowing should be adjusted to the percentage of pure live seed rather than merely following the rate indicated in a sowing table for seed that is average or better in purity and also germination. Seeds with low germination may not be a bargain when planted unless the rate is increased to insure a normal stand, since the additional amount of seed may bring the price up to the cost of good seed. However, if good seed is not available because of a poor seed crop for a particular year, it is better to use the low germination than buy unadapted seed, particularly that from foreign sources.

9. Have the students identify seed from actual labels according to whether it is certified, registered, verified origin, imported (from where?) or commercial. Have the student who correctly identified a seed, tell or write the purpose for which a purchaser would probably use it.

10. Review with the students the list of weeds which are considered as "noxious" in your state. Although weed seed identification is not a part of this competency, and perhaps in some cases is beyond what is expected of a retail clerk, there is no objection to teaching it at this time if it has not been covered in earlier vocational agriculture classes.

11. With the class, distinguish the difference between a guarantee and a warranty as it applies to seeds. Ask them to interpret the warranty printed on various tags or labels which have been collected or may be brought in from home.

12. Training to be a "seed analyst" is beyond the scope of this module or high school level students. It properly

belongs in a post-high school course. However, teacher demonstrations or the visiting of a laboratory where commercial or official seed testing takes place is desirable for developing understandings and appreciations.

13. Show samples of seed with inert material, weeds, hard seeds, and/or different varieties present when taking up each of these points.

14. The suggested time allotment for teaching this competency is:

Classroom instruction----------- 4 hours
Laboratory experience----------- 5 hours

Total----- 9 hours

Note: Class and laboratory time need not be differentiated as they may be mixed as the teacher sees fit.

Note: It is believed that this competency can be adequately developed at the school and field trips would only be desirable to visit a nearby seed testing laboratory or a seed cleaning or grading plant. Any field trips would be included as a part of the laboratory time except for that lost in travel.

Suggested Instructional Materials and References

Instructional materials

1. Educational materials from State Seed Improvement Associations and Departments of Agriculture are probably more applicable to local use than publications prepared for nation-wide distribution. The former usually includes films and film strips as well as brochures on methods of seed improvement, variety descriptions, and adaptations.

2. Labels, tags, seed packages and catalogs either collected by the teacher or brought in by the students to provide visual and theoretical coverage as well as authentic data for student interpretation and practice

3. Seed samples which bring out a specific point in the subject matter such as stained foreign alfalfa seed

4. Reports of seed testing laboratories, particularly those of the state testing laboratory

References

Seeds - The Yearbook of U. S. Department of Agriculture, 1961.

Suggested Occupational Experiences

Although this competency is fundamental, it is believed students can develop it concurrently in connection with the occupational experience allotted for other competencies of this module, particularly competencies III and IV.

VI. To be familiar with the services offered by a firm which are either beyond the skill of the customer or which require the use of special equipment

Teacher Preparation

Subject Matter Content

Service in connection with the agricultural supply business has been growing rapidly in recent years and promises to continue growing as more and more people want things done for them and have the money pay for them rather than doing the work for themselves. At one time, the customer bought his seeds and plants from a seed store or nursery and expected to do the rest of the work himself, using hand equipment which he owned. The only exception was in the case of the aged or handicapped who might hire someone to mow the yard, plow or spade the garden, and perhaps trim or prune the shrubs.

When people began to come to the seed store or nursery and indicated they wanted to buy, but only if they could get someone to do the work which was arduous (e.g., fertilizing lawns), or which they condsidered beyond their skill (e.g., pruning), it was logical for the firms to maintain initially a referral list of people who the customer could hire and eventually to hire the service people themselves and charge the customer a fee for the work.

The rapid advances in technology, particularly in the control of insect and disease pests, weeds, fertilizing, etc., require knowledges and skills beyond the ability of the usual local handyman. The cost of power machinery for application (which was used for only a relatively few hours each year) precluded each person from owning his own.

Most farm supply dealers would still prefer to make a profit from merchandising rather than supplying service. Some still attempt to get along by renting tools or referring a customer to someone who will do the work. However, some machinery, particularly in field crop production (spraying liquid fertilizers, etc.) is too complicated and expensive to rent to individuals and it works out better to make arrangements for the machinery, operator, and material to be made available on a custom rather than a rental basis.

The rapid growth of garden centers which supply everything from trees to mulching materials meant delivery and setting was necessary in order to meet competition. These costs were often included in the purchase price in contrast to the referral practice where the customer paid initially for the material and later on paid for its handling. The interst in high quality lawns and the stake of the seed merchant on the success of his product due to fertilizing and the control of weeds made it desirable for many firms to develop complete lawn services.

At first, the service end of a business might be taken care of on a part-time basis by employees who had other helpers who would do the planting, fertilizing, spraying, etc. Now, large establishments have specialized personnel, so the functions of the salespersons, the deliverymen, and the men who will do the work on the customer's site are entirely separated and clearly delineated.

While all services must be paid for in some form, there are some advantages to including the cost as a part of the sales price rather than attempting to make an extra charge. This is not only to meet competition but also because there are fewer replacements necessary under "livability guarantees" when material is properly installed and given a good start by competent workmen.

The plan for supplying services differs with each company and varies from none at all to a complete service for every aspect of the basic material sold. However, one of the following patterns tend to exist.

1. No formal service is provided, but informal referral is made to someone who must be contacted by the customer.

2. Providing delivery service with the customer making his own arrangements for service, possibly using informal referrals as in No. 1 above.

3. The company assuming responsibility for securing the serviceman and sponsoring his work, but the customer paying him independently of the cost of the material purchased.

4. The company employing the serviceman on a salary or wage basis and either absorbing the cost of the service in the price of the material or making a separate charge.

5. The company providing a service, independent of whether or not any materials are purchased (e.g., for spraying), for which a fee is charged.

Another aspect of the development of the present day service business is illustrated by the individual who may start on a small basis, but who develops a reputation for his knowledge, work, and dependability so that his clientele call him first rather than the suppliers. He may only do the work, or provide the equipment; but it is not unusual for him to quote a price including all the materials which he may get from a single supplier or from multiple sources whenever he believes he gets the best quality for the lowest cost. A good example is the sodding business.

The ability of an individual to build his own service business attests to the fact than there is an inherent profit in this activity. In general, this profit should also be available to the agricultural supply firm whose main business is in supplying materials. However, frequently when a large firm attempts to hire someone to do this kind of work for wages or salary, it has difficulty in making it pay (which is a tribute to the "entrepreneur" type of small business). For this reason, many firms prefer to sponsor "associates" who use their products and on whom both the firm and the customer can rely, but who operate on their own. A good example of this is the man who provides a complete lawn service.

Regardless of the kind and extent of the services offered by a firm, the retail sales person should know what is available, how it may be secured, and about how much the cost should be. He should be familiar with the company policy as to whether the customer should be encouraged to use elaborate services when available or "play it down" when the company wishes to keep the service aspect at a minimum.

The cost of services may be standardized and all the salesperson needs to do is refer to a chart, such as spraying charge per acre, or it may be on a job basis with or without an estimate having been made in advance. In the latter case, the estimate may be the responsibility of the salesperson, the service person, or some specialized person who does nothing but make estimates.

A listing of all service activities to be found in connection with the agricultural supply business is beyond the space limitations of this module. A suggestion for developing such a list is made under teaching-learning activities. However, examples under different groupings may be of interest and include the following:

1. Field crop production -- seed cleaning and treatment (seed born diseases)
   -- liquid fertilizer application (or granular)
   -- spraying or dusting (herbicides, insecticides, fungicides)
2. Vegetable and flower gardening; small fruits
   -- same as field crops except that equipment used is probably smaller and less powerful
3. Ornamentals, forest, and tree fruits
   -- planning, planting, fertilizing, pruning, trimming, etc.
4. Lawns -- grading, seeding, fertilizing, mulching, spraying, mowing, (as a part of complete lawn service); sodding when indicated.
5. Complete service for large homes--estates, etc., including planning, planting, fertilizing, care and pruning, control of pests, etc.

Suggested Teaching-Learning Activities

1. Develop with the class a concept of the "service" aspects of the agricultural supply business as presented in the subject matter content.

2. Work with the class to develop a list of the services which are frequently available through agricultural supply firms based on the product they supply. It is realized that no one firm will probably provide for all of the services. The teacher should place the headings on the board and give one example under each. The students can list the material under its common trade name and then indicate the service; or list the service and then indicate the trade names of the material used.

Examples

Name of crop	Material used	Service performed
Wheat	Mercury dust	Seed treatment
Soybeans	Amaben	Pre-emergence spray
Corn	Atrazine	Post-emergence spray
Tomatoes	Plant setter	Available for rent
Raspberries	Tools on applicator	Available for rent for pruning-spraying
Small fruits	Ortho Fungicide	Custom spraying
Evergreen shrubs	"Pipron fungicide"	Spray
	Labor and tools	Reset when overgrown
Roses	Complete dust	Insect and disease control
Home	"Turf builder"	Fertilize and weed control
Golf course	"Treflan"	Crab grass control
Tree removal	Chain saw	Available for rent or complete service
Fence building	Tools	Available for rent or complete service

3. It is realized that farm supply stores in smaller towns may not provide as broad a coverage of services as those in or near large cities. For this reason it is believed the listing under teaching-learning activity No. 2 should precede the identification of the services available through local retail outlets. This may be done by adding another column to the listing to show the name of the firm that provides such service. An alternative way would be to first identify the names of suppliers of services and then list what they do.

4. A field trip for first-hand observation of the service activities of a large firm may be illuminating but should not be a repetition of what is already known or what has been seen on previous field trips conducted for other purposes.

5. Individuals who like to work for themselves should consider the costs and possible returns from self-employment. This would involve: (1) developing a list of equipment needed and its initial cost, (2) developing depreciation schedules on the equipment needed, (3) finding out what the "going rate" is for the various kinds of services which can be performed, and (4) computing the possible annual income after expenses have been considered.

6. The suggested time allotment for teaching this competency is:

Classroom instruction------	3	hours
Laboratory experience------	0	hours
Total---	3	hours

Field trip time included with those taken for other competencies.

Suggested Instructional Materials and References

1. There are no specific instructional materials or references.

2. Advertisements, particularly in local papers, may indicate services which are available and should be brought to class.

3. Periodicals and trade literature may stimulate the thinking of both the teacher and the students toward service activities, especially the articles written along this line.

4. Modules in the courses in Farm Machinery--Service Occupations and Ornamental Horticulture consider service aspects and may be referred to by the teacher when appropriate.

Suggested Occupational Experiences

1. Many sales and potential management personnel get their start through service activities. Students might begin at a very low level and then advance to greater responsibility for service or transfer into the sales fields.

2. Work experience in service activities of large farm supply stores or garden centers initially in a helper capacity would be quite satisfactory.

3. Work experience in production (field crops, garden crops, ornamental, etc.) would be helpful in developing this competency particularly if use is made of services (e.g., liquid nitrogen application).
4. Students contemplating developing their own service business for homeowners, golf courses, etc., can start by working for small wages for a person already established who needs relatively unskilled help as he expands from a one-man operation.
5. Part-time work after school or during the summertime is quite satisfactory for developing occupational experience in this competency.

VII. To be able to compare the strong and weak points of the products offered by the employee's company and its competitors

Teacher Preparation

Subject Matter Content

Every company would like to believe and have the customer believe that it is the best in the field and that every one of their products is the best of its kind. Unfortunately, this is probably never true or at least not true to the discerning person.

There is no excuse for making palpably false claims for your products, or maliciously running down the competitor or his product; but the successful retail salesperson in agriculture supplies should not hesitate to point out strengths and admit bonafide weaknesses in varieties or products. This does not mean that he should make a fetish of this; but rather that his knowledge strnegthens his position with the customer when a question is asked, a statement is made, or a problem is unsolved.

Strengths and weaknesses are usually value judgments made by an individual on the basis of his specific situation. The salesperson who is well acquainted with the customer or who can elicit information as to his particular situation is in a better position to point out strong and weak points which will assist that customer in making the right decisions on what to buy, when to buy, and where to buy at this firm. When a weakness in a product is recognized, the salesperson should also state, if possible, what is being done by the producer to overcome that weakness.

Situations arise when it is best for the salesperson to inform the customer that he and his firm are not in a position to provide the desired product or service to meet a particular need, but another firm, which may be a keen competitor in some areas, stocks a particular item or brand or can give service, and is conveniently located so that the customer could try there. This saves the customer's time, creates a friendly feeling toward the broad-minded firm, and in all probability will be reciprocated by the firm recommended at some other time under similar conditions. For example, a salesperson in a garden center which carries a limited stock of vegetable seeds could well recommend a nearby competitor who handles a comprehensive stock, with the full knowledge the latter would send customers to him for ornamentals which were not carried in stock. Of course, this presupposes that the quality of products is comparable or satisfactory as it would be a doubtful favor to direct someone to an unsatisfactory source.

As in the case of other competencies, particularly No.XII, it is manifestly impossible to cover the strength or weakness of every service or product available whether it is in stock, is available by ordering, or from a competitor. For this reason, only one example of a strength and one of a weakness will be indicated for each aspect of the retail outlet taken as a whole. This is followed later by one strength and one weakness for specific examples in the product groups.

1. Planning services

Strength lies in having competent people to do this in all of the areas (field crop production, vegetable gardening, ornamentals, etc.). Competency must be related to the scope and difficulty of the situation concerned. A high school graduate with vocational agriculture experience should be able to plan a home vegetable garden, but it takes a person more highly trained in landscape architecture to plan for the beautification of a large estate or a public building; even this man possessing general knowledge may not be able to plan a golf course properly.

Weakness in planning services lies in the fact that a plant by an untrained or partially trained person may not cost very much to produce, but it may not be of great value to the customer or sell very much for the firm. Reputable firms who will send some competent person to view the situation and draw up a comprehensive plan on the site either have to receive a fee for this plan or sell enough materials to cover its cost in time and travel. A common arrangement is for no fee to be charged if the order for material and services resulting from it costs over a previously established minimum figure. The man with the technical competence to do professional planning is usually too valuable to be used in service capacities; smaller firms, especially those trying to cover a variety of products, may not be able to afford such a person to wait on the trade part of the time or do the work of planting, etc., after the plan is completed. The small operator with a truck who cares for lawns and grounds may be competent to make simple plans for items such as foundation plantings for small homes. This is usually the type of plan provided when requests are telephoned into a non-specialized supply center.

2. Planting

Strength lies in having plant materials which can be planted with the least effort and the least possible chance for error in location, depth, watering, etc. The use of "Jiffy" strips, pots and trays is a marked advantage over ceramic pots, wooden flats or no containers at all.

Weakness lies in that any special preparation of materials to be sold must be justified by increased sales or less labor (e.g., sowing seeds in a hotbed or colframe and then selling plants by the 100 rather than singly or in dozens).

3. Cultural practices

Strength lies in having salespersons competent enough to inform the customer on both simple and advanced aspects (e.g., pruning); making equipment available for rent to those who do not care to invest or will have little need for extensive use (e.g., electric hedge trimmer); or providing some one to do the work if the customer would prefer to pay rather than doing it himself (e.g., fertilizing lawns).

Weakness lies in having only clerks who check out the customer (self-serve principle) after he blindly searches for what he wants and finally selects something he is not sure will be satisfactory or solve his problem.

4. Insect and disease control

Strength lies in a store's having a complete line of materials to cope with all known pests in a variety of sizes to suit the needs of the very small producer (housewife) to those of the commercial grower. The tendency is to provide materials in the form easiest to apply even though this may run up the cost for packaging, etc., (e.g., aerosol sprays). Some customers may prefer dusts to sprays which must be mixed, but do not want to buy ready-mixed dusts if they have a large area to cover because it is cheaper to buy the concentrate and mix it with the carrier at home.

Weakness lies in having to sell for higher prices to cover the cost of stocking so many different items and sizes with the inherent danger of slow-moving items becoming out of date or having to be closed out at a loss. There is a profit in spray and materials only when the volume of business is sufficient to keep prices competitive with those of other stores, many of whom sell in bulk. Many people would prefer hiring persons for pesticide control work, but the cost may be prohibitive if the size of the job is small, even if the firm provides this service.

5. Harvesting

Strength lies in demonstrating the yield and quality of seeds and plant materials at harvest time. Many seed companies, such as hybrid seed corn firms, identify plantings by their trade names or offer valuable prizes for achieving the highest yield or the largest specimen. Flower and garden shows are becoming more common with farm supply and garden centers offering prizes or serving as sponsors.

Weakness lies in the fact that the cost of promotional events, like all advertising, must be justified in the end by increased sales. Well thought out and managed contests, and shows are expensive and may be risky. The firm that does the most promotion may not get the most business if prices asked are out of line with those who do not promote.

Examples of strengths and weaknesses of product items are:

a. Field crop production

A new variety of wheat is very resistant to loose smut, but has no resistance to scab. If scab is a disease problem for the area and a dealer does not stock it for this reason, but a competitor does because of its "newness," the salesperson must be able to explain why he cannot supply it when a customer asks for it.

b. Vegetable gardening

Spancross is the earliest hybrid seed corn produced (71 days) but is susceptible to bacterial wilt. This usually makes Spancross a disappointment to anyone except the person who likes to have first "roasting ears" in the neighborhood. What should a salesperson do if a customer asks for Spancross and the firm does not stock it because of its known unsatisfactory performance?

c. Flower gardening

Marigolds are perhaps the most popular and easiest raised flowers in the home garden and come in a variety of shades, including some that are not pure white. One variety, "Hopeful," is almost white and to the ordinary person appears white, especially at maturity. This variety lacks uniformity in color and its flowers vary in size. If a firm does not stock it for these reasons, what should a salesperson say to a customer who is aware that a competitor does?

d. Lawns

Seed can be treated at the time of cleaning to protect against decay, damping off, blight, and root rots, but the expense increases the cost by 10¢ per pound. Is a farm supply center in a better competitive position to offer both treated and untreated seed than another firm which carries only the untreated seed but sells the seed treatment separately for those who desire it?

e. Home beautification

A competitor in a northern state advertises Boxwood plants for less than a firm's cost price. In all probability, these are "Common Box" plants which are fast growing but will not live over winter except in the south. How can a salesperson explain why his firm sells only "English Box" which are winter hardy and are more expensive because they are slow growing, when to the eye both plants appear to be the same?

Suggested Teaching-Learning Activities

1. After the introduction to the competency is given by the teacher on the general subject matter content, he should differentiate between strength and weaknesses of services offered by a firm (planning, planting, etc.) and strengths and weaknesses of individual items in the product line (seeds, plants, etc.). This should only take enough time to indicate the reason for the consideration of examples

under separate general headings rather than follow the format used in the previous module, although the names are similar.

2. The teacher may present the examples indicated under the various headings, which could be placed on the chalkboard, or use examples of his own choosing. The purpose of these examples is to stimulate the class to come up with others which naturally involves thinking and at the same time broadens the coverage. After consideration of the "services," the same procedure could be used for the "products." It will be noted that the examples in the section of Subject Matter Content are often worded to lead up to a teacher-learning situation rather than to mere statements of fact.

3. Role-playing can be effectively used as in the following examples:

    a. Field crop production--There are advantages and disadvantages of seeds developed and offered for sale by state improvement associations vs. commercial or proprietary companies. One student can represent a farmer who is satisfied with the seed he is using from one source and another take the part of a salesman from the competitor.

    b. Vegetable gardening--Some seed houses grow their seeds on their own farms while others buy theirs on the open market. One student can represent a customer who wants justification for this practice from another student representing a salesman from one type of seed house. This would be repeated with different students for the other type of seed house.

    c. Flower gardening--Some seed houses and nurseries may have exgensive plant breeding programs and bring out new and presumably better varieties each year while others handle only standard items. One student may represent a salesperson for the former in trying to sell another student acting as a customer who merely wants a standard variety which sells for a lower price. Another pair of students can take the reverse position of a salesperson in a firm with only standard varieties attempting to placate a customer who inquires for a new, and perhaps experimental, variety which is not in stock.

d. Lawns--Seed mixtures may specify the amount of each kind or variety (open formula) or merely indicate that it is designed for satisfactory use in the specific situations implied in the name, e.g., Shady Mixture--(closed formula). One student can represent the salesperson defending the closed formula to a customer who insists on knowing the percentage of the contents in order to compare costs if he mixes his own seed.

   Another pair of students could play the roles of the customer who does not know how much of each kind of seed he should use for a specific situation and a salesperson who does not know either. (They must both use their combined knowledge and check one another as they read labels, catalogs, or talk with other salespersons.

e. Home beautification--Ornamentals can be grown in the southern states much faster and cheaper than in the northern states which have shorter growing seasons and more expensive labor. The result is many firms can buy plant materials from the South and sell them for less than they can be produced for in the North. One student can take the part of the salesperson in the garden center offering "bargains" and another a customer who wants justification for the low prices before buying. Another pair of students can reverse the roles with the salesperson representing the firm whose prices seem high to the customer who wants to be sure he is getting the most for his money before buying.

4. Use of notebooks as suggested for competency No. X.

5. The suggested time allotted for the teaching of this competency is:

   Classroom instruction--- 3 hours
   Laboratory experience--- 2 hours

   Total---- 5 hours

   Field trips are not considered appropriate or necessary for this competency, but individual contacts and observations on the student's own time will be helpful.

Suggested Instructional Materials

Those listed for competency X are pertinent to this competency. However, they are listed here in a descending order of probable importance.

1. Trade publications - catalogs and sales manuals
2. Educational materials put out by the various trade associations (not individual firms)
3. Farm and garden magazines featuring timely articles
4. Special articles or weekly columns in newspapers
5. The usual publications in bulletin form from state agricultural agencies and the U.S.D.A.
6. Yearbooks of the United States Department of Agriculture

Suggested Occupational Experiences

The types of occupational experiences to be gained for mastery of this competency would be the same as for competency X listed on page 63.

VIII. To develop the ability to find product information quickly from catalogs and other sources

Teacher Preparation

Subject Matter Content

Circumstances will always arise when a customer inquires for some item, has a need but does not know exactly for what to ask, or the store will not have it in stock for the following reasons:

1. It may be usually carried but temporarily out of stock because of unusual demands or delay in shipment of regular orders, or it may be "back ordered" by the supplier.
2. It may have been discontinued because of lack of demand.
3. It may have been replaced or superceded by an improved product.

4. The demand may be so little that keeping an item in stock is not justified, but it can be readily obtained from the supply channels already established by the firm.
5. It is not in the general line of business of this firm and the potential demand is too small to justify either stocking it or establishing a source of supply for special orders.

Retail outlets probably have a policy covering the above circumstances and a salesperson should acquaint himself with it before a customer makes an unfillable request.

The salesperson should also know the usual supply channels of the firm for the different products which are stocked; which are made available on an order basis; or to which firms the customer can be referred if there is no business in prospect because of lack of demand, service required, or other reasons.

Major supply houses, wholesalers, and manufacturers have sales representatives or "fieldmen" who call upon retail outlets regularly whenever the volume of sales justifies orders and to provide information on new developments. Catalogs, price lists, etc., are left with the retail outlets for re-ordering between visits or to encourage ordering by smaller firms not regularly contacted. The ease of doing business over the telephone has reduced the need for personal contacts from fieldmen and has made it easier for the little firm to secure its supplies without having to make out order blanks or submit orders on a regular basis.

Few retail outlets in the agricultural supply field attempt detailed inventory control with automatic re-order when the stock dwindles to a certain number of days' supply. The more usual procedure is for a person to be designated for each group or phase of the business to keep under observation the turnover of a product and to reorder so that under normal conditions the new supply arrives before the old one is exhausted. This may be done on a daily basis when shelves, bins, etc., are resupplied from bulk or warehouse stocks on on a weekly, monthly, or seasonal basis, using an order form provided by the supply house. Multiple operations of the chain store type usually have a detailed procedure and form to follow.

Most retail outlets maintain an "order book" in which hurried entries are made by anyone who feels the stock is getting low or who, all too often, discovers it has been exhausted. The same book may also be used to indicate the date of reordering so that in case of inquiry, some information can be given as to the probable date it will be available, keeping in mind the normal delivery time.

The usual procedure in case of inquiry for an item ordinarily carried in stock but suddenly exhausted is to: (1) consult the order book or other source of information as to when the new stock is expected, (2) offer to make a special order either by phone or mail with the possibility for speeding up delivery by special handling or shipment direct to the individual, etc., (3) provide the customer with an order which will permit him to pick up the item personally at the supply house. The billing in the latter case will be to the retail outlet rather than to the individual since a wholesaler ordinarily protects its customer by refusing to sell at retail. In either of the last two instances, it is helpful and speeds up the sales process if the salesperson knows exactly where to locate the item in the catalog and/or price list, and can turn to it readily or can locate it through the index in order to get the proper serial number, size, quantity, etc.

When the item desired is not ordinarily carried in stock but it is good business to order it for a customer, facility in locating and using the appropriate catalog may mean the difference between making a sale and losing one. Rather than wait for the occasion to arise before learning how to use a catalog, a salesperson should be generally familiar with its contents, the method of indexing, the data which can be expected to be found, whether pictures of items will be found, what information must be placed on order blanks, what provision can be made for delivery including the billing of the charges, and, last but far from least, what are the terms of payment including discounts for larger orders and penalties for late payments. This may be done anytime when there is a lull in the business routine, or the manager may specify that it be done early in the employment experience as a specific part of the employee's orientation.

Before offering to check on delayed shipments or to order items not normally carried in stock, an adroit salesperson will try to find out whether there is something else which is in stock that may satisfy the customer's needs. Frequently this may involve a substitution of size or quality, but many times it is a matter of switching from one brand to another or from one form to another, e.g., dust instead of spray and vice-versa. Price may be a controlling factor, but a salesperson must be aware of the store's policy before offering to substitute something which markedly lowers the profit margin. For example, it may be quite proper to substitute two half-gallons of sheep dip at the gallon rate when the larger containers are out of stock but questionable to sell large trees for smaller ones selling for half the price.

A salesperson must be judicious in deciding how far to go in pressing for the immediate use of a substitute or excusing

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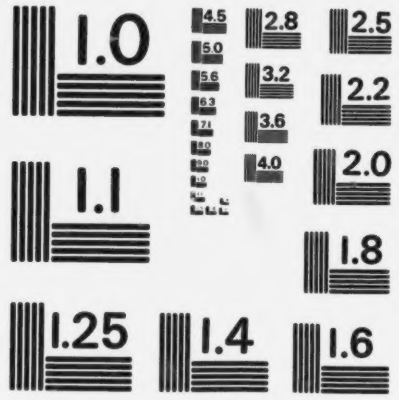
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

delay caused by re-ordering before suggesting an alternative local source who may be a competitor.

Since no two supply houses or companies have the same way of preparing or indexing their catalogs, this will not be considered in the subject matter but will come out in the laboratory work proposed in the teaching-learning activities.

Suggested Teaching-Learning Activities

1. The teacher can start the class discussion by posing the question, "What should you as a retail salesman in (insert local name) Farm Supply Center do if a customer asked for (insert item) and you found it out of stock?" Stress to the students that farm supply store managers consider failure in this competency as one of the biggest weaknesses of employees in such stores. Following time for reflection by the students, it should be possible to develop the various points presented in the subject matter content from the class. When understanding has developed, the teacher can go to the second aspect and ask the same general question but substituting the name of an item which is not normally carried in stock but which can be easily ordered.

2. A field trip is not warranted in case the class does not have sufficient knowledge to properly answer the above questions, but a resource person (manager or owner) might be invited to come to the school to discuss these matters with the class after proper orientation by the teacher.

3. Samples of catalogs from major supply houses and producers, (seed) manufacturers, (spray materials) should be collected (borrowed if necessary, although old or out-of-date ones which have been discarded are satisfactory for the purpose) by the teacher for laboratory use by the class in developing ability to locate and interpret information. After a reasonable time for general "getting acquainted" with catalogs has elapsed, the teacher can ask a general question in the role of a customer and conduct a contest among the students to locate the answer speedily and correctly. Such a question for a garden store might be, "I want to get a Japanese Maple like the one I saw here last year, or thought I saw here but it may have been somewhere else, and I do not see it now," or for a farm supply store, "I want to get some Piperazene to get rid of tapeworms, coccidia, and roundworms when I drench my shop next week."

4. Since there may not be enough of any one catalog or catalogs for similar supply courses for every member of the class, or even pairs of students, the teacher might make up a list of several questions for each of the types of catalogs he has, which could be typewritten and pasted on the front. Then the students could find the answers as a laboratory or homework assignment. By rotating the catalogs, coverage of all types will result. Care should be taken not to expend too much time on this activity.

5. The teacher and his class may prepare a catalog for their own locality by collecting materials from several sources and combining it into one publication in a three-ring notebook using the "scissors and paste" method.

6. The suggested time allotment for teaching this competency is:

Classroom instruction------	2	hours
Laboratory experience------	3	hours
Total----	5	hours

Suggested Instructional Materials

1. Catalogs as indicated under the teaching-learning activities. These may be quite comprehensive and expensive to produce, so care should be exercised in making requests, especially for multiple copies. However, old copies which have no further value should be easy to secure and are just as satisfactory for laboratory use as current ones.

2. Large companies and cooperatives may have instructional material they use in the training of their fieldmen, managers, etc., which may be helpful if available.

3. Apparently, books or pamphlets pertaining to this competency are not available.

Suggested Occupational Experiences

1. On-the-job experience in any retail outlet will help to develop this competency with a farm supply store ranking highest followed by a garden supply store.

2. Production experience in nurseries, greenhouses, or on the farm is of very little value in developing this particular competency and can hardly be considered as satisfactory for this purpose.

3. For students who cannot secure any appropriate on-the-job experience, additional work on the students' own time, with the catalogs as envisaged in No. 3 of the teaching-learning activities might be considered satisfactory. However, this may become boring and of doubtful value of measured purely on an hourly basis.

IX. To understand the basic economics of home beautification, crop, and garden production in terms of costs and expectations

Teacher Preparation

Subject Matter Content

The two questions usually uppermost in the mind of a customer, whether he be an actual or a potential purchaser, are, "How much does it cost?" and "What will it do for me?" These same two questions are probably asked of a retail salesperson in a farm supply center more than any others. The salesperson who anticipates these in the minds of his customers is in a much better position to be of service and close a sale than one who does not.

It is too much to expect every salesperson to have a broad and comprehensive knowledge of the economics underlying the use of all the products offered for sale, but some of the basic aspects as indicated below will be helpful. The salesperson who appreciates the importance to the customer of such questions of basic economics will be in a better position to serve the customer more effectively. The teacher will undoubtedly think of better examples than those listed, while some students will have a carry-over from Agriculture I and II.

1. Field crop production

   a. There must be a balance in expenditures among cost items (seed, fertilizer, etc.) and this is usually more important than the total cost in determining the profit; examples include:

      1) Should a farmer buy certified seed every year?

      2) Should a farmer plow down large amounts of fertilizer as well as apply at planting time?

      3) Should a farmer use "Amaben" (generally acknowledged at the present time as the best but most expensive herbicide for soybeans) to control weeds on all of his soybean acreage?

b. The greater the expense invested in a crop, the more important it is that things get done on time. Examples include:

   1) Preparing the seedbed at night with two operators alternating when the season is late because of excessive rainfall

   2) Applying pre-emergence spray before the weed seeds germinate

   3) Applying the post-emergence spray when it will get the weeds and not hurt the crop

   4) Harvesting before weather conditions cause loss of quality and yield

c. Labor-saving and specialized equipment which costs a lot of money may be necessary in order to get things done on time, but is of no value if it is not ready to go when needed or if the operator is unable to repair it if something happens at the critical time during its use. Examples include:

   1) Seed drills and sprayers not calibrated

   2) Sprayers with plugged lines or worn-out nozzles

   3) Mowers needing cutter bar overhaul or adjustment

   4) Balers that will not tie

d. Low cost of production per unit is important, but the selling price frequently is more important in determining profit or loss. Farmers should have in mind where and when they will find a market at the time they invest the money for its production (seed, fertilizers, spray, etc.). Examples include:

   1) Corn fed through steers rather than sold on the open market.

   2) Certified wheat for seed rather than sold at market price

2. Vegetable gardening

   a. The size of the operation must envisage what will be done with the vegetables raised so they will not be wasted if for a home garden or sold for loss in a commercial operation. Examples include:

        1) All the sweet corn maturing at the same time
        2) Too many strawberries for home consumption but not enough for commercial or roadside marketing
        3) Beans can be used for food by shelling, if there are too many for use as green beans when mature, but peas cannot (satisfactorily)

    b. Labor must be available to harvest the vegetables when they are ready and should be planned for ahead of time. Examples include:
        1) Too large a pickle acreage means less No. 1 pickles, where the profit is made, if it cannot be picked every day during the peak season.
        2) Sales may be lost if the roadside stand operator has vegetables ready for harvest but cannot leave the stand to get them when the customer comes to buy.

    c. Early plantings mean high prices for early markets, but the possibility for frost must be anticipated. Examples include:
        1) Covering tomato plants (hot caps)
        2) Covering melon seeds in boxes (under protection) and setting them as "hills" will gain two weeks.
        3) Planting over a limited acreage (but not entire field) if sweet corn is damaged by a late frost

3. Lawn culture

    a. The more grass you grow the more there is to mow, so one must decide when the personal satisfaction (or increased sale potential) outweighs the labor involved.

    b. There is little use in applying fertilizer, seed, etc., if the ground needs leveling or grading, which should be done first.

    c. Weeds grow because they can compete with the grass which is limited by the fertility or environmental circumstances, (e.g., shade). Digging out (or using herbicides) will not remove weeds permanently but fertilizer and reseeding will, e.g., dandelions.

d. Whether or not to use sod or to reseed may depend on the area, the necessity for grading, relative cost, and satisfaction of immediate growth.

e. A riding mower will not replace a hand mower for getting close to fences, etc.; when a person can afford to own both varies with the individual situation.

4. Home beautification (flowers and ornamentals)

a. Flowers are more colorful but require more work than evergreens.

b. Annuals are cheaper when raised from seed but more work is required than by purchasing plants.

c. Potted plants and bedding plants in porch or window boxes often satisfy a need (when space is limited) for flowers, but not all plants are suited for this type of planting (e.g., tall growing plants or vines).

d. Perennials cost more initially but may be more satisfactory in the long run because of less labor involved.

Suggested Teaching-Learning Activities

1. Much of the economic side of the use of seed and plant materials will come out at the time other competencies and modules are taken up. However, it is believed a definite time should be set aside for generalization toward the end of this module so the potential retail salesperson can more easily understand the customers' point of view or point out factors which may have been overlooked. The items indicated in the subject matter content are only a few which may come up during the class discussion.

2. The teacher should challenge the students to do original thinking by pointing out what may be right for one individual may not be right for another. It is better to consider the different divisions of this competency separately, although much of the economics of one applies to all. For example, net income is more important to crop and vegetable production with personal satisfaction paramount for lawns and home beautification.

3. Role-playing may be a good technique to bring more reticent members of the class into the discussion.

Assign pairs to take the parts of customers and clerks and bring out actual or hypothetical situations based either on the examples in the subject matter content or others experienced or thought out by the individuals concerned.

4. The suggested time allotment for teaching this competency is:

Classroom instruction----------	3	hours
Laboratory experience----------	1	hours
Total----	4	hours

Suggested Instructional Materials

1. There are no instructional materials which may be considered specific for the teaching of this competency although much of which have been used previously will be contributory. In essence, this competency is an individual development of judgment growing out of other factors.

2. Encouraging the students to read farm and garden periodicals with a critical eye on the economic aspects of articles read should be helpful.

Suggested Occupational Experiences

Almost any kind of work experience either in production or sales (preferably both) of plant materials will be helpful in developing this competency. The students' projects and supervised work experience programs in Agriculture or Horticulture I and II and their experiences with their own home situations may be contributory toward a basic understanding of the competency.

Some competencies require specific occupational experience to develop, while others are outcomes of generalized experience. This competency belongs in the latter category, and it would be difficult to pinpoint a particular work experience to develop it by itself.

X. To be able to help customers solve their problems through advice given related to plant production

Teacher Preparation

Subject Matter Content

Many customers seek more information from the retail salesperson than from any other person, and in a sense, the latter is in a poor position to advice because of his usually limited education and training in specialized fields. It is recognized that a person cannot be a specialist in all fields; however, the teacher needs to point out that because of the contact between the customer and salesperson, the latter is called upon to give advice in many areas. Much of this competency may have been developed in previous courses in vocational agriculture or horticulture before embarking on the course in Agricultural Supply--Sales and Service, or will be developed in the other modules in this course, particularly those on Fertilizers and Agricultural Chemicals. Modules from the course in Horticulture, especially module VI, on "Recognizing and Controlling Plant Pests," will be helpful and should be included if time permits.

No attempt is made here to treat exhaustively the subject matter content which is as broad as agriculture itself. Rather, it will be limited to what the teacher needs to indidate to the student regarding his opportunity and responsibility in handling inquiries which may arise in his retail sales work and the promotion of increased business and "good will" because of the service provided.

1. Planning

Customers may arrive with a very detailed plan either in their heads or on paper, or no plan at all. The salesperson needs information on the individual or home situation but must use good judgment in securing it before offering advice. When there is no plan at all, he must decide: (1) how much time to spend with the customer in developing one, (2) whether he can develop a proper plan or refer the customer to someone who can, either in or outside the firm, (3) who he should suggest to draw up the specific plan according to its size or scope, and (4) whether or not a fee is involved.

When a detailed plan exists, the salesperson may save the customer time, money, and possible embarrassment by pointing out discrepancies, omissions, or possibly incorrect information. He may also make timely suggestions for subsequent action of which the customer may not think and which may bring him back to the store as a satisfied customer for additional purchases.

The extent to which a retail salesperson can go in planning depends on his own ability and training, the time involved, whether it is necessary to visit the site, and the store policy (they may have special sales personnel assigned to do this work, especially if it involves travel).

The planning may be in any of the following areas:

a. Field crop production

   1) Rotations - (feed, soil improvement, government programs, etc.)

   2) Succession of crops (especially pasture, hay, soilage, etc.)

   3) Seed or feed production (certification procedures)

   4) Canning crops (requirements, etc.)

b. Vegetable gardening

   1) Planning the home garden to provide a succession of crops in accordance with the size of the family and the space available (small fruits as well as vegetables)

   2) Planning the commercial garden to meet the known or anticipated needs for roadside stand or resale (kind of crops, varieties, planting schedule, etc.)

c. Flower gardens

   1) Planning for a succession of outdoor flowers

   2) Planning for flowers for indoor situations or limited space (potted plants, porch boxes, etc.)

d. Lawns

   1) Planning a complete program for establishment or renovation (preparation, seed selection, fertilizing, mulching, watering, etc.)

   2) Planning remedial programs for special situations (shade, weeds, etc.)

3) Planning for golf courses and special uses

e. Home beautification

1) Making a complete plan for all outside areas

2) Modifying or enlarging an existing plan

3) Making a minimum plan for initial planting with provision for later additions

4) Making specialized plans for specific purposes (foundations, specimen, trees, plant screens, rose gardens, etc.)

2. Planting

The rapid increase of the number of people who have had no previous experience in "raising things" but are avid to learn at buying time means increased questions to the salesperson. (The information provided on the label may not be sufficient for the neophyte.) Even if not asked, it is good practice for a salesperson to assure (reasonably) himself that the seeds or plant materials will be handled so there is a reasonable chance for them to grow and live to produce a crop or bring satisfaction to the customer.

The salesperson is rarely called upon to provide advice on all planting and culture, but usually there are critical or "key" items which he should be concerned about checking with the purchaser. No attempt will be made to catalog all of these for all of the plants, but one example is given under each group to stimulate the teacher.

a. Field crop production

Sudan grass sorghum crosses make abundant feed for green chop but pasturing the aftermath following the last cutting may be dangerous, especially if there has been frost (prussic acid poisoning).

b. Vegetable gardening

Cucumbers and cantaloupes will mix (cross pollinate) and must not be planted close together unless they will bloom at different times because of damage to the flavor.

c. Home beautification

Some ornamental evergreens may look small and appear attractive for foundation plantings at the time of setting out but will eventually grow tall and either spoil the effect or have to be removed. (Example--Norway Spruce or Arbor Vitae)

d. Lawns

Applying lime may be necessary if a customer wants white clover but is unnecessary for lawn grasses and encourages weeds.

e. Flower garden

Choosing the location and providing something for standard sweet peas to climb on so that they will not become a problem when other flowers are planted. (Another solution, if you would like sweet peas, would be to use dwarf varieties.)

3. Cultural practices

Disappointment to the customer is even keener when crops fail after they start growing than it is if they do not come up at all. Timely advice on critical factors provided by the salesperson for those customers who need it will often avoid failure due to poor cultural practices. Examples of this are:

a. Field crop production

The necessity of breaking the crust formed by rain to permit soybeans to emerge because of the presence of the "dicotyledons" making it difficult for the plant to pull through the surface after sprouting; the importance of the inoculation of legumes.

b. Vegetable gardening

The value of starting seeds (melons) under "hot caps" and protecting tender plants, e.g., tomatoes, from possible frost

c. Flower gardening

"Pinching" back terminal shoots to induce more abundant flowering (e.g., roses)

d. Lawns

Mowing to avoid seed production of crab grass and annual bluegrass

e. Home beautification

Avoid "shearing" when pruning ornamentals, such as Boxwood.

4. Insect and disease control

While complete treatment of this subject is beyond the scope of this material and more complete coverage is presented in the module No. X on Agricultural Chemicals, people who have problems want solutions quickly or appreciate warning in advance so the problem can be prepared for or avoided. As with planting and cultural practices, only examples will be given under the several groups.

a. Field crop production

Mercury compounds will control stinking (covered) smut but not loose smut in wheat.

b. Flower gardening

Aphids cause leaves to curl and frequently carry disease so that controlling the aphid with Malathion will prevent the spread of a disease (virus).

c. Vegetable gardening

Stomach poisons (e.g.,) arsenate of lead are of no value against sucking insects.

d. Lawns

Damage from pests usually does not show until the turf dies in spots. DDT or Malathion gets most of them (grubs, webworms, etc.).

e. Home beautification

Practically all roses suffer from disease (powdery mildew and black spot) as well as insect attacks (spider, mite-sucking, curculio-chewing). Many companies offer an all-purpose rose dust containing both a fungicide and an insecticide to control all rose pests (available in aerosol spray for easy but limited application).

5. Harvesting

Certain crops must be harvested at a certain time or in a particular way for best results. Some lend themselves to particular methods of preservation. Planting time is a long way from harvesting, but satisfied customers are the result when they know in advance and can plan accordingly. Examples include:

a. Field crop production

The time of combining oats is critical. They must be cut "the day before they are ready, the day they are ready, or the day after they are ready", to get the greatest yield. The man who uses a custom combine must plan in advance.

b. Vegetable gardening

Tomatoes may be preserved by canning but not by freezing (at least not at the present time).

c. Flower gardening

Keep in mind the buds from which the next flowers will come when taking off blooms which are ready for cutting. In this way the maximum crop of the choicest flowers will result. Indiscriminate cutting may remove buds which will not open or leave stems with no flower buds to produce later cuttings, e.g., roses.

d. Lawns

Clippings allowed to remain on the ground at mowing time make good mulch, but those with mature crab grass seed should be removed and burned.

e. Home beautification

Seed cones from evergreens should be gathered and saved for Christmas decorations at the time they fall rather than be exposed to the weather, destroyed by lawnmowers, or raked up with the trash.

Suggested Teaching-Learning Activities

It is realized that no one can provide good advice on all technical matters pertaining to agricultural supplies and that advice on specific items should be backed by as much scientific knowledge as possible. Advice is usually based on the application of scientific principles so that the greater the amount of previous education in the sciences (including agriculture and horticulture) the easier it will be for an individual to develop this competency. With this orientation and that indicated in the subject matter content, the teacher might proceed as follows:

1. Develop examples of "key" items with the class in addition to those offered in the subject matter content under the various groupings. When listed on the chalkboard, one example will lead to another. However, no attempt should be made to develop a complete listing because of the time involved.

2. When an example indicates that a scientific principle is involved which is new to the class, or on which they need refreshing, special assignments and reports by the most interested and qualified students are appropriate, provided they are not beyond the scope for a high school course. Much material may be more appropriate for a post-high school course.

3. Students should be encouraged to keep a personal notebook or reserve a part of their class notebook for the recording of critical information not readily retained in their memory or found in source documents. An example would be: Sock brussels sprouts in salt water to remove aphids before cooking.

4. Use role-playing to stimulate half of the class to be customers seeking advice and the other half to be the salesperson who must respond. This should be as realistic as possible with the questions growing out of the students' true-to-life experiences and the responses made in as professional a manner as possible. A pair of students can enact their roles in front of the class with appropriate scores or grades awarded by the teacher after critiquing by the rest of the class.

5. Have students report observations made in their occupational experience centers as customers seek advice.

6. The suggested time allotment for the teaching of this competency is:

Classroom instruction----------	5	hours
Laboratory experience----------	2	hours
Total---	7	hours

Suggested Instructional Materials

This competency embraces the entire gamut of agriculture and horticultural science so that many textbooks, reference books, bulletins, and trade literature would apply to some extent and may be needed for teacher preparation, the following may be assembled for ready reference as needed:

1. State publications of the Extension Service and Agriculture Experiment station

2. Trade publications, particularly sales manuals and catalogs

3. Educational materials put out by various trade associations, e.g., Seed Improvement Association and/or commercial companies

4. Yearbooks from the United States Department of Agriculture

5. Bulletins of the USDA, particularly those pertaining to Insects and Diseases, e.g., USDA Agriculture Information Bulletin No. 237, "Controlling Insects on Flowers."

6. Farm and garden magazines which feature timely articles

7. Special articles of weekly columns pertaining to agriculture, home landscaping, etc., as they are read by students (with much encouragement from the teacher)

Suggested Occupational Experiences

Almost any occupational experience in production and merchandising agricultural supplies will be of value in developing this competency because of its degree of broadness which can be developed only over a period of years. It is envisaged that a student would start in one area, probably in a helper capacity to someone with more experience, and then slowly, and sometimes painfully to his ego, learn the degree to which he has the ability to provide appropriate advice to customers. Complete competency in one area is not necessary before broadening to other areas, since much information and many principles will apply to more than one, e.g., control of insects in field crops as well as garden crops.

Occupational experience should be broad if the student plans to work in a farm supply or garden center which features many lines. On the other hand, the student who will be working solely in landscaping would be better off to secure his occupational experience with a firm specializing in chemicals.

Occupational experience in a roughly descending order of acceptablity could be gained in: (1) farm supply stores, (2) garden centers, (3) nurseries, (4) vegetable gardens, (5) landscaping firms, (6) greenhouses, and (7) farm work. The latter is contributory and possibly satisfactory, but not high-ranking, because it is largely in field crop production.

Suggestions for Evaluating the Educational Outcomes of This Module

It is hoped that all students will be able to find gainful employment in some capacity which will permit the development of as many of the competencies of this module as possible before the end of the course or during the following summer. It is believed it is both the teachers' and the students' responsibility to find these employment possibilities and that both should share in the evaluations of (1) the opportunities for the development of the competencies needed for this module, and (2) the degree to which the students make use of these opportunities. It might be possible to defer giving a grade for the course, or awarding credit until after the summer vacation to permit a more accurate evaluation if such a procedure is agreeable with the school administration.

The cooperating employer should join the teacher and the student in evaluating the attainment of the student, both in overall competency (satisfactory or not) and/or in considering each competency separately. Taken individually, this might be done in connection with the following competency check list:

	Highly competent	Competent	Incompetent	Not a part of his duties
1. Does the student "know the stock"?				
2. Does the student understand how different plant materials enter into the reproductive process?				

	Highly competent	Competent	Incompetent	Not a part of his duties
3. Does the student understand methods of plant improvement, including Pure Line selection, Hybridization, and Mutation?				
4. Does the student know variety names and characteristics?				
5. Can the student interpret labels and tags (terms and figures used)?				
6. Can the student provide appropriate advice to the customer when needed?				
7. Does the student know the strong and weak points of products in stock as well as those of competitors?				
8. Is the student capable of ordering from a catalog when an item is not in stock?				
9. Does the student understand the basic economics underlying use of an item or a group of items?				
10. Is the student familiar with the services offered by the firm?				

The teacher would not be obliged to accept the concensus of the three evaluators (student, teacher and employer) or give the judgment of the employer a higher weighting than that of the student. It is believed that an evaluation is a part of the learning process and the student should be familiar with the above check list reasonable early in the course with the employer oriented at the time considered most auspicious by the teacher.

Failure to find gainful employment for occupational experience does not necessarily mean unsatisfactory attainment of the competencies of this module. All students should be evaluated at the close of each competency and at the end of the course. This evaluation must necessarily be largely subjective by the teacher with a heavy weighting on "Attitude" (how the students looks at what he is expected to do) and

"Industry" (how hard the student works at what he is expected to do). These criteria would apply to both occupational and school experience. For example, a student who refused to accept employment in a service capacity because there were no openings in sales could not be considered as having a very good attitude. Conversely, a student who was doing excellent work in occupational experience but refused to engage actively in school-learning activities would also have a poor attitude.

One basis for grading might be:

Attitude and industry (taken together)------------------------50%
(Some teachers might allow 25% for each.)

School learning activities

Participation in class discussion, and laboratory work---20%

Grades on written quizzes or practical tests at the close of each competency-------------------10%

Grade on the student notebook-----------------------------10%

Grade on the final examination----------------------------10%

Total----------100%

The best evaluation of the appropriateness of the subject matter and the effectiveness of the teaching-learning activities will not be possible until after the students have been out of school several years and engaged in career work experience. At that time, the effectiveness of this particular module may be determined as a part of the evaluation of the course as a whole.

Sources of Suggested Instructional Materials and References

Instructional materials

1. **"First the Seed," color/sound film**, 27 minutes. Associate Seed Growers, Inc., Modern Talking Picture Service, 3 East 54th Street, New York.
2. "A Tree is Born," color or black and white film, 29 minutes. Motion Picture Service Office of Information USDA, Washington, D. C.
3. "Controlling Insects on Flowers," Information Bulletin No. 237 (example, send for complete list). Office of Information USDA, Washington, D. C., 1962.

Much of the teaching of this module grows out of the observation and previous experiences of the teacher and students rather than out of specific text or reference books.

State publications available to the teacher from the State Experiment Station, College of Agriculture, Department of Agriculture, Seed Improvement Associations, etc., are often more valuable and applicable than USDA publications for the teaching of this module because of their specific applicability to local conditions.

Catalogs and trade publications available from many sources locally or by mailed requests will be most helpful.

Farm and garden periodicals and magazines should be subscribed to by the school for ready access and use by the students.

References

1. Christopher, Everett P. Introductory Horticulture, McGraw-Hill Book Company, New York, 1961. Price: $7.95.
2. Delorit, Algren. Crop Production, New York: The Macmillan Company, 1959. Price: $6.84.
3. Hartman and Kester. Plant Propagation - Principles and Practice (teacher reference only), Englewood: New Jersey: Prentice-Hall, 1961.
4. Hedges. Landscaping Your Home, 1962. Instructional materials service, 2120 Fyffe Road, Columbus, Ohio. Price: $1.00.
5. Hoover, Juergeson. Approved Practices in Beautifying Home Grounds, The Interstate Printing and Publishing Company, Danville, Illinois, 1959. Price: $3.50.
6. Knott. Handbook for Vegetable Growers, New York, New York: Prentice-Hall, 1957. Price: $3.95.
7. Shoemaker, James S. General Horticulture, Philadelphia, Pennsylvania: Lippincott Company, 1952 (or similar standard work of later date).
8. Seeds Yearbook of the U.S.D.A., Office of Publication, U. S. Department of Agriculture, Washington, D. C., 1961.

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INSTRUCTOR NOTE: As soon as you have completed teaching each module, please record your reaction on this form and return to the above address.

1. Instructor's Name____

2. Name of school________________________State________________

3. Course outline used:
   - _____Agriculture Supply--Sales and Service Occupations
   - _____Ornamental Horticulture--Service Occupations
   - _____Agricultural Machinery--Service Occupations

4. Name of module evaluated in this report______________________

5. To what group (age and/or class description) was this material presented?____
____

6. How many students:
   a) Were enrolled in class (total) ______
   b) Participated in studying this module ______
   c) Participated in a related occupational work experience program while you taught this module ______

7. Actual time spent teaching module:

Actual time spent teaching module:		Recommended time if you were to teach the module again:
_____hours	Classroom Instruction	_____hours
_____hours	Laboratory Experience	_____hours
_____hours	Occupational Experience (Average time for each student participating)	_____hours
_____hours	Total time	_____hours

(RESPOND TO THE FOLLOWING STATEMENTS WITH A CHECK (✓) ALONG THE LINE TO INDICATE YOUR BEST ESTIMATE.)

	VERY APPROPRIATE					NOT APPROPRIATE
8. The suggested time allotments given with this module were:						
9. The suggestions for introducing this module were:						
10. The suggested competencies to be developed were:						
11. For your particular class situation, the level of subject matter content was:						
12. The Suggested Teaching-Learning Activities were:						
13. The Suggested Instructional Materials and References were:						
14. The Suggested Occupational Experiences were:						

(OVER)

15. Was the subject matter content sufficiently detailed to enable you to develop the desired degree of competency in the student? Yes_____No_____
Comments:

16. Was the subject matter content directly related to the type of occupational experience the student received? Yes_____No_____
Comments:

17. List any subject matter items which should be added or deleted:

18. List any additional instructional materials and references which you used or think appropriate:

19. List any additional Teaching-Learning Activities which you feel were particularly successful:

20. List any additional Occupational Work Experiences you used or feel appropriate:

21. What do you see as the major strength of this module?

22. What do you see as the major weakness of this module?

23. Other comments concerning this module:

________________ (Date)

________________________________ (Instructor's Signature)

________________________________ (School Address)